

PAINT NO.	NAME OF PART	QTY. ORDERED	MATERIAL	SPEC.	REMARKS	ORDERING BUREAU	MANUFACTURER CONTRACTOR	UNIT	QUANTITY ORDERED
1200	ARQUITE ASBESTOS FELT	112 1/2	ASBESTOS SHEETING	32 F. 3	1" THICK			UNIT	112 1/2
1201	ARQUITE ASBESTOS FELT	NO 3	ASBESTOS SHEETING	32 F. 3	1" THICK			UNIT	112 1/2
202	ASBESTOS CLOTH	NO 1	ASBESTOS CLOTH	32 F. 3	1" THICK			UNIT	112 1/2
203	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
204	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
205	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
206	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
207	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
208	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
209	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
210	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
211	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
212	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
213	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
214	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
215	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
216	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
217	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
218	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
219	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
220	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
221	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
222	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
223	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
224	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
225	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
226	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
227	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
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232	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
233	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
234	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
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238	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
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241	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
242	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
243	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
244	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
245	PLASTIC CEMENT								

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226	PLASTIC CEMENT	500	PLASTIC CEMENT	32 F. 3	1" THICK			UNIT	112 1/2
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245	PLASTIC CEMENT								

- 1 THIS PLAN IS TO BE FOLLOWED AS A MINIMUM. MAKE SUCH MODIFICATIONS AS MAY BE NECESSARY TO PROVIDE FOR EASY ACCESS TO MANLY ETC.
- 2 INSULATION AND CEMENT TO BE INSTALLED IN ACCORDANCE WITH ACTUAL MEASUREMENTS AND AROUND ALL FITTINGS.
- 3 PIPES TO BE INSULATED. ALL THE EXTERNAL NON-LOADING SURFACES OF THE PUMP TUBES AND THE PUMP BODIES SHALL BE THOROUGHLY CLEANED AND COATED WITH AN ALKALI RESISTANT COATING. THE INTERIOR COATS WILL BE APPLIED HEAT RESISTING PAINT, NO SPECIFIC NAME [NOT] IN ACCORDANCE WITH SPEC. SPECIFICATION 101-11.
- 4 THE PUMP TUBES AND BODY ARE TO BE INSULATED WITH THREE LAYERS OF 1" THICK QUALITY INSULATOR FOLLOWS EQUAL TOTAL 3" THICK. THE PUMP BODIES TO BE INSULATED WITH TWO LAYERS OF 2" THICK QUALITY INSULATOR FOLLOWS EQUAL TOTAL 4" THICK. ALL LAYERS TO BE STITCHED TOGETHER.
- 5 ALL INSULATION TO BE SECURED TO THE PUMP TUBES AND THE PUMP BODIES WITH 8x6W.G. BLACK GALVANIZED HOT RIVETS WHICH IS ASSIGNED TO STEEL WORKS JET WELDED TO THE PUMP TUBES AND PUMP BODIES.
- 6 ALL INSULATION SURFACE OF THE PUMP TUBES AND THE PUMP BODIES TO BE OVERLAPED WITH 1/2" THICK PLASTIC CEMENT TYPE "A". THE 1/2" MIXED WITH 1/2" PORTLAND CEMENT, POURED AND FINISHED TO A SMOOTH FINISH AFTER IT IS COMPLETELY DRY. AN INSULATION ALLOWED TO DRY. THE RESULTING SHALL THEN BE COVERED WITH 1/2" THICK CLOTH. WHICH SHALL BE COATED ON THE INSIDE WITH INSULATION CEMENT AND ALLOWED TO DRY THOROUGHLY. THE JOINTS OF THE INSULATED CASE SHALL BE REINFORCED WITH INSULATED AND PORTLAND CEMENT AND A REINFORCEMENT.
7. THE MANUFACTURERS NAME PLATE TO BE SECURELY FASTENED TO A CONVENIENT PLACE ON THE OUTSIDE OF LOGGING.

This technical drawing shows a cross-section of a mechanical assembly. On the left, there is a circular component with a central shaft or pin, labeled with 'A' and 'B'. This is connected to a larger, more complex structure on the right. The structure has several internal features, including a large curved surface and a vertical section on the far right. Various parts are labeled with letters (A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z) and numbers (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100). The drawing is a black and white line drawing with dashed lines indicating hidden internal features.

REFERENCES		
NO.	TITLE	CONTROLLING BUREAU NO.
1.	REFEPC MAIN AIR PUMP OILING	3-A 700-11
2.	WTC/DX MAIN/FIT. PUMP TROUBLESHOOTING	3-A 700-12

DESIGN AND ENGINEERING BY
GBBS & COX, INC.

NEW YORK CITY
10020-8

LIST OF MATERIAL QUANTITIES FOR ONE SHIP

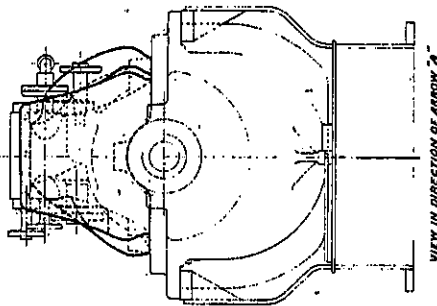
NO.	NAME OF PART	QTY.	MATERIAL	QTY.	REMARKS
1	ENGINE	1	STEEL	1	1 ENGINE
2	PROPULSION	1	STEEL	1	1 PROPULSION
3	STEERING	1	STEEL	1	1 STEERING
4	ANCHOR	1	STEEL	1	1 ANCHOR
5	WINDMILL	1	STEEL	1	1 WINDMILL
6	WINDMILL	1	STEEL	1	1 WINDMILL
7	WINDMILL	1	STEEL	1	1 WINDMILL
8	WINDMILL	1	STEEL	1	1 WINDMILL
9	WINDMILL	1	STEEL	1	1 WINDMILL
10	WINDMILL	1	STEEL	1	1 WINDMILL
11	WINDMILL	1	STEEL	1	1 WINDMILL
12	WINDMILL	1	STEEL	1	1 WINDMILL
13	WINDMILL	1	STEEL	1	1 WINDMILL
14	WINDMILL	1	STEEL	1	1 WINDMILL
15	WINDMILL	1	STEEL	1	1 WINDMILL
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17	WINDMILL	1	STEEL	1	1 WINDMILL
18	WINDMILL	1	STEEL	1	1 WINDMILL
19	WINDMILL	1	STEEL	1	1 WINDMILL
20	WINDMILL	1	STEEL	1	1 WINDMILL

GENERAL NOTES

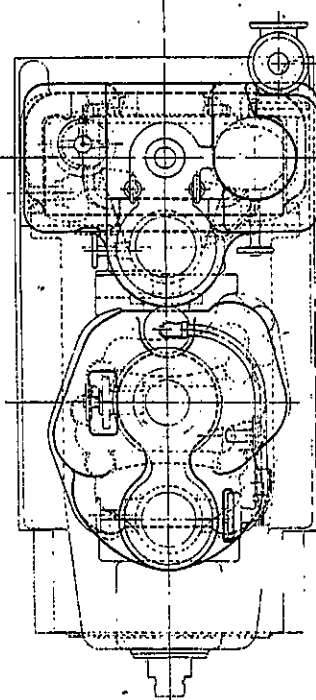
1. THIS PLAN IS TO BE USED FOR THE PURPOSE OF ESTIMATING THE QUANTITY OF MATERIAL REQUIRED FOR THE CONSTRUCTION OF ONE SHIP.
2. THE QUANTITY OF MATERIAL REQUIRED FOR THE CONSTRUCTION OF ONE SHIP IS BASED ON THE ASSUMPTION THAT THE SHIP IS TO BE CONSTRUCTED OF STEEL.
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REFERENCES

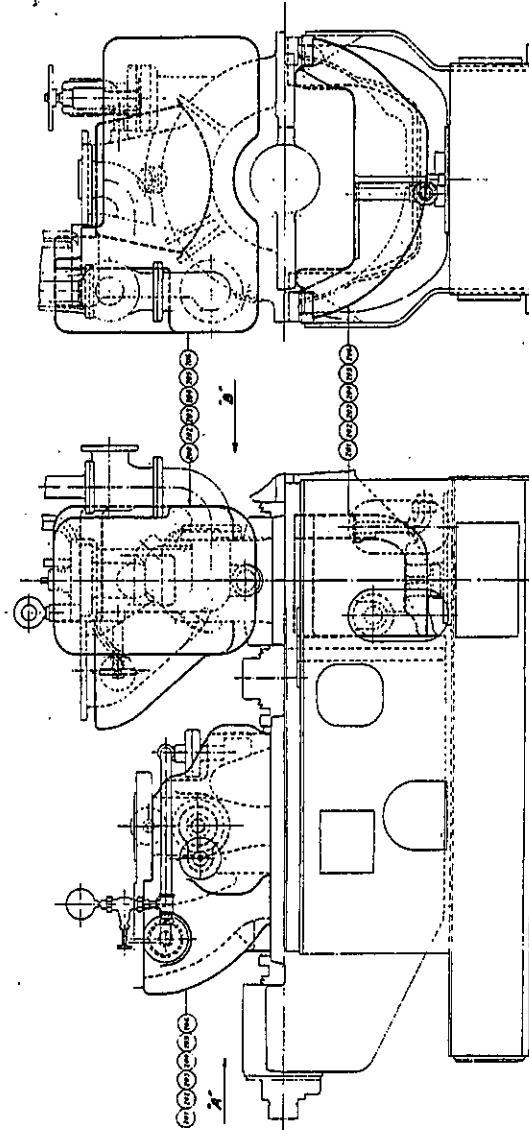
NO.	TITLE
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VIEW IN DIRECTION OF ARROW "A"

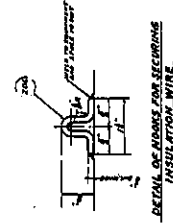


PLAN



VIEW IN DIRECTION OF ARROW "B"

ELEVATION



DETAIL OF FRAME FOR SECURING JOINTS TO FRAME

APPROVED SUBMITTAL PANEL
MAY BE USED FOR 1 YEAR'S
NAVY CRITICAL MATERIALS

LIST OF MATERIAL - QUANTITIES.. FOR ONE SHIP

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SEE SHIPS PLAN INDEX
FOR VESSELS OF
AMERICAN CITY OF THIS
PLAN TO ANY VESSELS.

THIS PLAN APPLIES TO DD-692 CLASS
2200 TON DESTROYERS

FEDERAL SHIPBUILDING
AND DRY DOCK CO

KEENE, N.J.
DESIGN AND ENGINEERING BY
GARY & COX, INC.

OR. NO. 692-3872-14

NAME and address
 phone no.
 NAME OF
 phone no.

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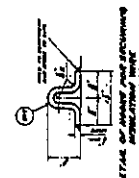
Johnnie

COMPTON

[illegible]

INSULATION AND LAGGING
FOR MAIN CIRCULATING PUMP
AND H.P. AIR COMPRESSOR

00692 - 53902 - 14 ALT. I



UNCLASSIFIED
DATE 08-14-2013 BY 60322 UCBAW

NET AREA: 27.25 SQ. IN.

SHIP NUMBER (OWNER'S NUMBER)

SHIP NAME

SHIP TYPE

SHIP CLASS

SHIP NO.

BELT SHIPS PLAY INDEX FOR VERIFICATION OF APPLICATION OF THIS PLAN TO ANY VESSELS.

THIS PLAN APPLIES TO DD692 CLASS 2200 TON DESTROYERS

FEDERAL SHIPBUILDING AND DRY DOCK CO. KEANY, N.J.

DESIGN AND ENGINEERING BY GBS & COX, INC. NEW YORK CITY

DR. NO. 692-3902-14

LIST OF MATERIAL - QUANTITIES FOR ONE SHIP

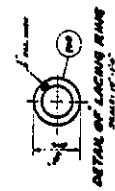
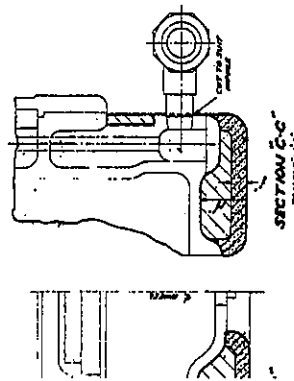
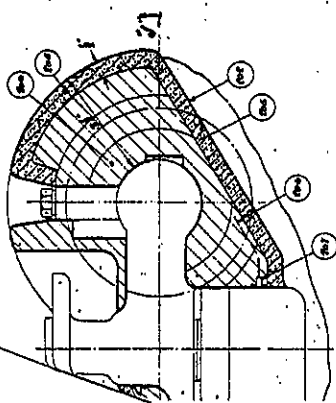
ITEM NO.	NAME OF PART	QUANTITY	MATERIAL	W. L.	REMARKS	ITEM NO.	NAME OF PART	QUANTITY	MATERIAL	W. L.	REMARKS
1	ANCHOR	1	STEEL	100		11	ANCHOR	1	STEEL	100	
2	ANCHOR	1	STEEL	100		12	ANCHOR	1	STEEL	100	
3	ANCHOR	1	STEEL	100		13	ANCHOR	1	STEEL	100	
4	ANCHOR	1	STEEL	100		14	ANCHOR	1	STEEL	100	
5	ANCHOR	1	STEEL	100		15	ANCHOR	1	STEEL	100	
6	ANCHOR	1	STEEL	100		16	ANCHOR	1	STEEL	100	
7	ANCHOR	1	STEEL	100		17	ANCHOR	1	STEEL	100	
8	ANCHOR	1	STEEL	100		18	ANCHOR	1	STEEL	100	
9	ANCHOR	1	STEEL	100		19	ANCHOR	1	STEEL	100	
10	ANCHOR	1	STEEL	100		20	ANCHOR	1	STEEL	100	

GENERAL NOTES

1. THIS PLAN IS FOR THE PURPOSE OF PROVIDING A GENERAL GUIDE TO THE MANUFACTURER OF THE SHIP AND IS NOT TO BE USED AS A BASIS FOR THE DESIGN OF THE SHIP.
2. THE MANUFACTURER OF THE SHIP SHALL BE RESPONSIBLE FOR THE DESIGN OF THE SHIP AND FOR THE SELECTION OF THE MATERIALS TO BE USED IN THE CONSTRUCTION OF THE SHIP.
3. THE MANUFACTURER OF THE SHIP SHALL BE RESPONSIBLE FOR THE DESIGN OF THE SHIP AND FOR THE SELECTION OF THE MATERIALS TO BE USED IN THE CONSTRUCTION OF THE SHIP.
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9. THE MANUFACTURER OF THE SHIP SHALL BE RESPONSIBLE FOR THE DESIGN OF THE SHIP AND FOR THE SELECTION OF THE MATERIALS TO BE USED IN THE CONSTRUCTION OF THE SHIP.
10. THE MANUFACTURER OF THE SHIP SHALL BE RESPONSIBLE FOR THE DESIGN OF THE SHIP AND FOR THE SELECTION OF THE MATERIALS TO BE USED IN THE CONSTRUCTION OF THE SHIP.

REFERENCES

ITEM	REFERENCE
1	U.S. NAVY, BUREAU OF SHIPBUILDING, DESIGN OFFICE, WASHINGTON, D.C.
2	U.S. NAVY, BUREAU OF SHIPBUILDING, DESIGN OFFICE, WASHINGTON, D.C.
3	U.S. NAVY, BUREAU OF SHIPBUILDING, DESIGN OFFICE, WASHINGTON, D.C.
4	U.S. NAVY, BUREAU OF SHIPBUILDING, DESIGN OFFICE, WASHINGTON, D.C.
5	U.S. NAVY, BUREAU OF SHIPBUILDING, DESIGN OFFICE, WASHINGTON, D.C.
6	U.S. NAVY, BUREAU OF SHIPBUILDING, DESIGN OFFICE, WASHINGTON, D.C.
7	U.S. NAVY, BUREAU OF SHIPBUILDING, DESIGN OFFICE, WASHINGTON, D.C.
8	U.S. NAVY, BUREAU OF SHIPBUILDING, DESIGN OFFICE, WASHINGTON, D.C.
9	U.S. NAVY, BUREAU OF SHIPBUILDING, DESIGN OFFICE, WASHINGTON, D.C.
10	U.S. NAVY, BUREAU OF SHIPBUILDING, DESIGN OFFICE, WASHINGTON, D.C.

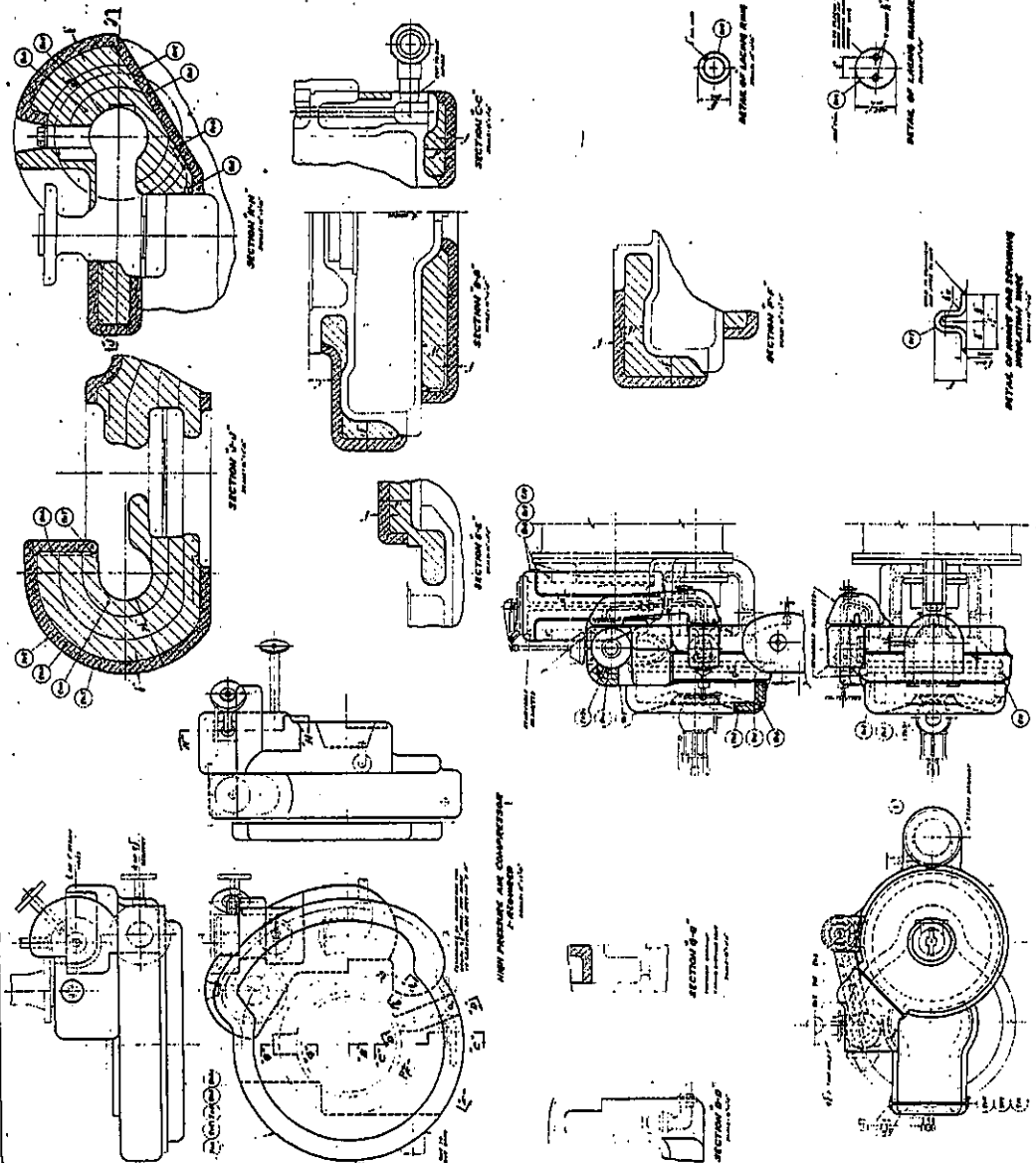


LIST OF MATERIAL - QUANTITIES FOR ONE SHIP									
ITEM NO	NAME OF PART	MATERIAL		U.S. PARTS	REMARKS	QUANTITY	UNIT	MATERIAL NO.	ITEM NO.
		STEEL	BRASS						
1	STEEL PLATE	100	0	100					
2	BRASS PLATE	0	100	100					
3	STEEL PLATE	100	0	100					
4	BRASS PLATE	0	100	100					
5	STEEL PLATE	100	0	100					
6	BRASS PLATE	0	100	100					
7	STEEL PLATE	100	0	100					
8	BRASS PLATE	0	100	100					
9	STEEL PLATE	100	0	100					
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26	BRASS PLATE	0	100	100					
27	STEEL PLATE	100	0	100					
28	BRASS PLATE	0	100	100					
29	STEEL PLATE	100	0	100					
30	BRASS PLATE	0	100	100					
31	STEEL PLATE	100	0	100					
32	BRASS PLATE	0	100	100					
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49	STEEL PLATE	100	0	100					
50	BRASS PLATE	0	100	100					

GENERAL NOTES

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DIFFERENTIAL

[illegible]

RAW CONDENSER CIRCULATING PUMP



REMOVED SUBSTITUTE MATERIALS ON
SERIES FOR MATERIALS ON
SERIES FOR MATERIALS ON

[illegible]

THIS PLAN APPLIES TO DD692 CLASS
2200 TON DESTROYERS

NEW YORK CITY
- 3902-16

DATE 11-11-68 BY W. J. J. J.

APPROVED _____
CHARGED BY NAME _____
APPROVED _____

PLANTAS DE LA ZONA	en la lista de Gramíneas
...	...

Latrine number _____

Richardson
June 1893

as a "medium" of expression of

مجلس الوزراء

UNITED STATES DISTRICT COURT

10-10-68

INSULATION AND LAGGING
FOR FORCED DRAFT

FOR FORCED DRINK!

00000000000000000000

BUREAU OF SHIPS FLAM NUMB001

DD FORM 1-61 5010-104-01



INSIGHT SUMMARY: (GROUP SUBJECT 1)

INSULATION	-----	324.0°
ELEMENT	-----	310.0°
ADHERENT CLOTH	-----	75.0°
MINICELLANEOUS	-----	18.0°
TOTAL		= 527.0°

GENERAL NOTES:

- [illegible]

REFERENCES		
NO.	TITLE	CONT. PLAN NO. BUREAU NO.
1.	POENCED DRAFT BLOWER ASSEMBLY LONG-TRIDUAL SECTION (WESTINGHOUSE PFB. CO)	
2.	DETAIL OF POENCED DRAFT BLOWER CYLINDER COVER	
3.	DETAIL OF POENCED DRAFT BLOWER CYLINDER BASE	

FEDERAL SHIPBUILDING
AND DRY DOCK CO.
HEARNY, N.J.
DESIGN AND ENGINEERING BY
CHAS. E. COV. INC.

RECEIVED
JAN 14 1964
U.S. DEPARTMENT OF
HEALTH, EDUCATION
AND WELFARE
OFFICE OF THE
ASSISTANT SECRETARY
FOR PUBLIC AFFAIRS
WASHINGTON, D.C. 20460

[illegible]

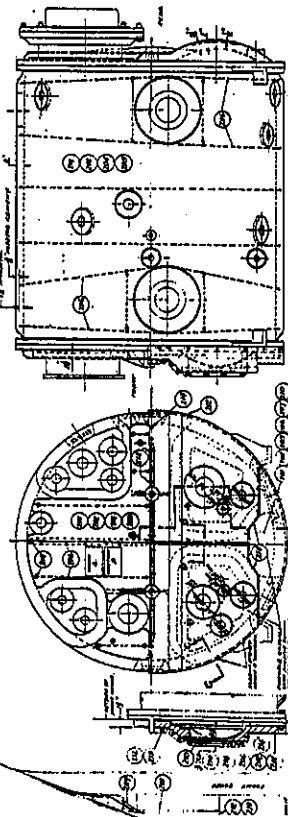
U.S. INSTITUTE OF
STATISTICS FOR MATHEMATICS

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[illegible]

APPROVED SUBSTITUTE MATERIALS
MAY BE USED FOR MATERIALS ON
NAVY CRITICAL MATERIAL LISTS.

GENERAL NOTES

[illegible]

1000 GALLON PER DAY AND 200 EFFECT EVAPORATOR

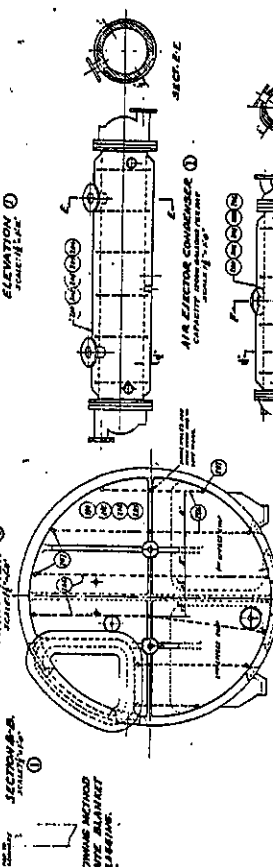
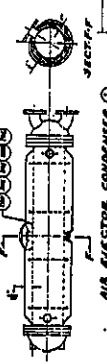
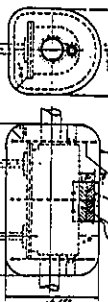


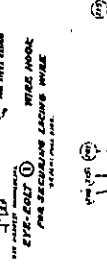
FIG. 2.2.15



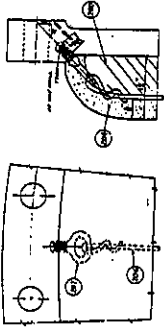
AIR EJECTOR CONDENSER ①



**DETAIL OF RINGS
ON WYING BLANKET**



SECTION D.D. ①



METHOD OF ATTACHING WIRE TO
EVAPORATOR COILS. ①



REFERENCES

[illegible]

SEE CHIPS PLAN INDEX
FOR VERIFICATION OF
APPLICABILITY OF THIS
PLAN TO ANY VESSELS

THIS PLAN APPLIES TO DD692 CLASS
2200 TON DESTROYERS

FEDERAL SHIPBUILDING
AND DRY DOCK CO.

DESIGN AND ENGINEERING BY
EGBLS & COX, INC.
NEW YORK, N.Y.

DR. NO. 692-3902-3

DATE APPROVED: _____
APPROVED BY: _____
DATE: _____
APPROVED BY: _____

[Signature]
A. L. BROWN
DIRECTOR OF INVESTIGATION

DATE: _____ NAME: _____
 OFFICE AND PHONE NUMBER: _____
 DEPARTMENT OF INFORMATION SERVICES

INSULATION AND LAGGING FOR DISTILLING PLANT

BUREAU OF SHIPS PLAIN NUMBER	ALT 1
00692-53902-3	

NO.	NAME OF PAINT	RELATIVE STRENGTH	MATERIAL	INT. / EXT.	THICK- NESS	REMARKS	LOADING MATERIAL	BARRED REINFORCING	PATTERN NO.	UNIT WEIGHT	PROD. NO.
120	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
121	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
122	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
123	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
124	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
125	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
126	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
127	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
128	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
129	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
130	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
131	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
132	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
133	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
134	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
135	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
136	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
137	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
138	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
139	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
140	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
141	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
142	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
143	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
144	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
145	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
146	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
147	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
148	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
149	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
150	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
151	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
152	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
153	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
154	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
155	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
156	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
157	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
158	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
159	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
160	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
161	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
162	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
163	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
164	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
165	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
166	PROVIDE RESISTANT PAINT	100	PAINT	INT. / EXT.	1/16"						
167											

GENERAL NOTES

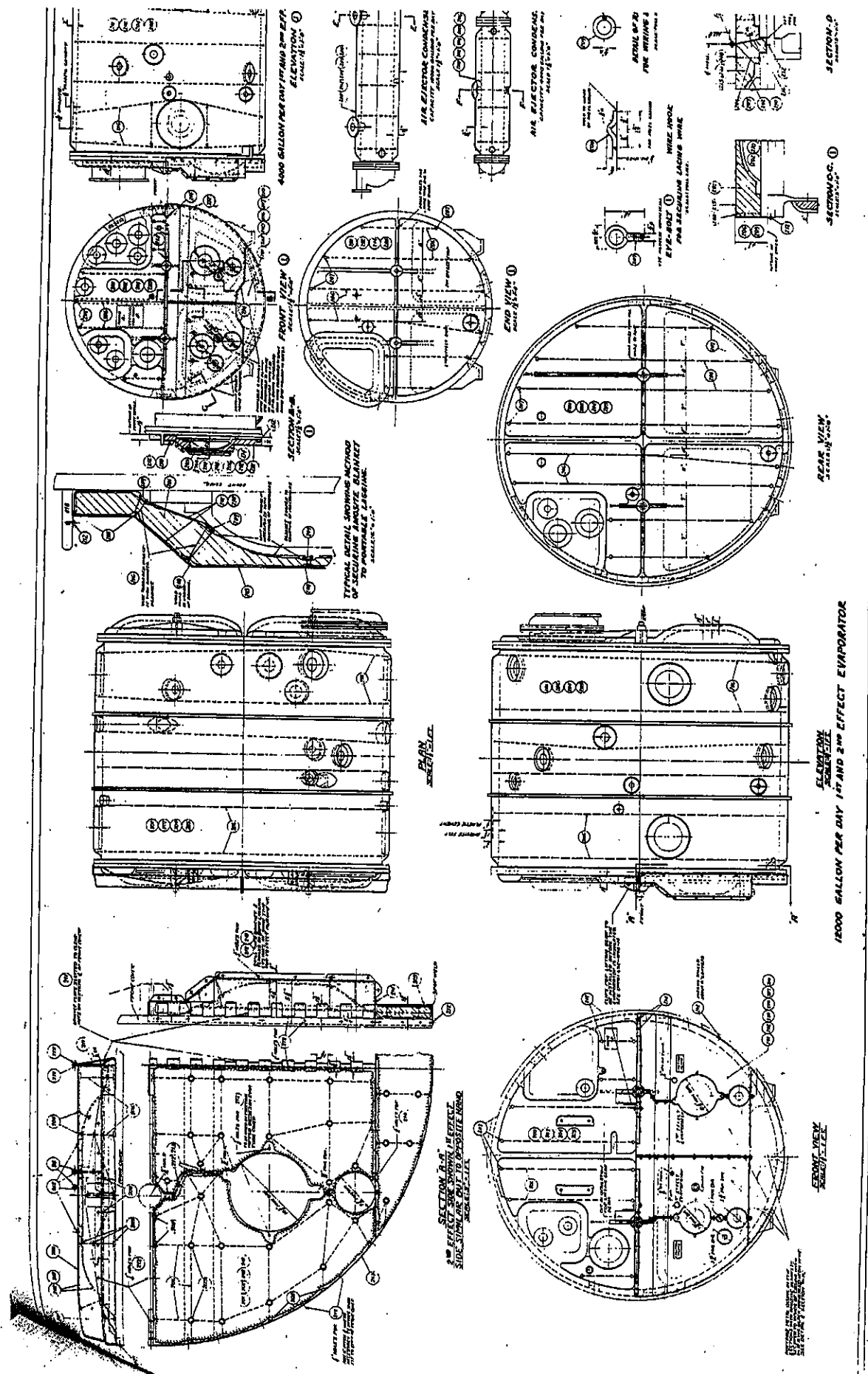
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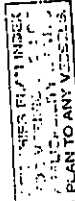
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THIS PLAN APPLIES TO DD692 CLASS
2200 TON DESTROYERS

**FEDERAL SHIPBUILDING
AND DRY DOCK CO.**
KEARNY, N.J.

**DESIGN AND ENGINEERING BY
GIBBS & COX, INC.**
NEW YORK CITY





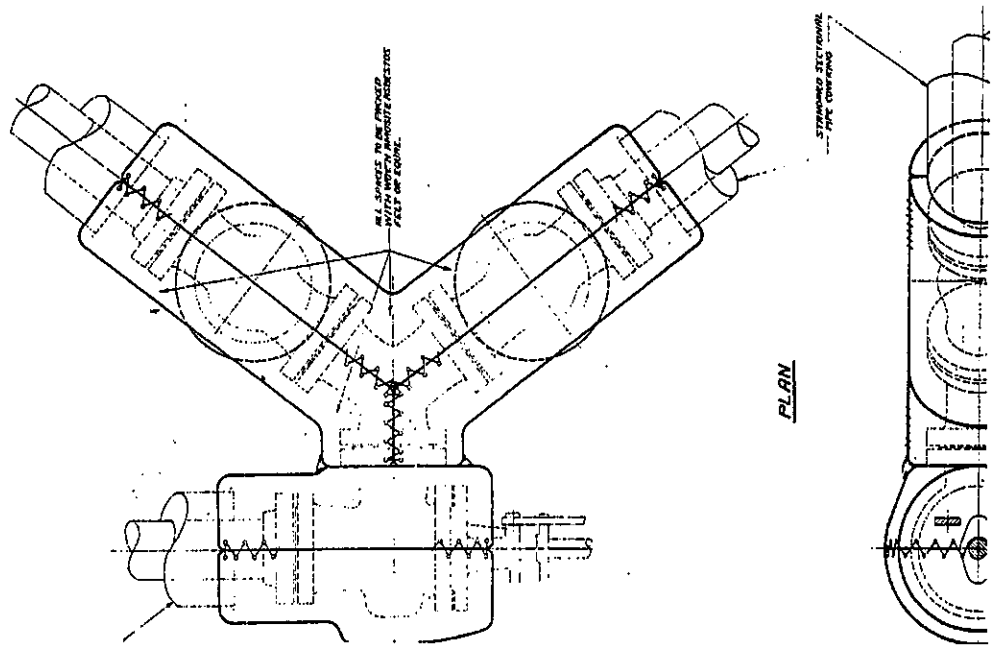
IN TYPICAL DETAILS

ALWAYS TO BE USED IN CONJUNCTION WITH
 SHOWN FROM SIDE VIEW INDICATED BY
 SECTION LINE FROM VIEW INDICATED BY

GENERAL NOTES

1. THIS DRAWING SHOWS TYPICAL INSULATIONS. LAGGING CONTRACTOR TO DETERMINE TYPE OF INSULATION TO MEET ACTUAL CONDITIONS ON SHIP.
2. ALL INSULATION AND LAGGING MUST MEET THE REQUIREMENTS OF NATIONAL SPEC. SUP-S-330-1 OF JUNE 19 1940.
3. FOR INSULATION AND LAGGING INSTRUCTIONS SEE Dwg 632-3302-5. (SEE NR D0632-3302-5).

REFERENCES	
NO.	TITLE
1.	INSULATION AND LAGGING STANDARDS, Dwg 632-3302-5
2.	INSULATION AND LAGGING STANDARDS, Dwg 632-3302-6

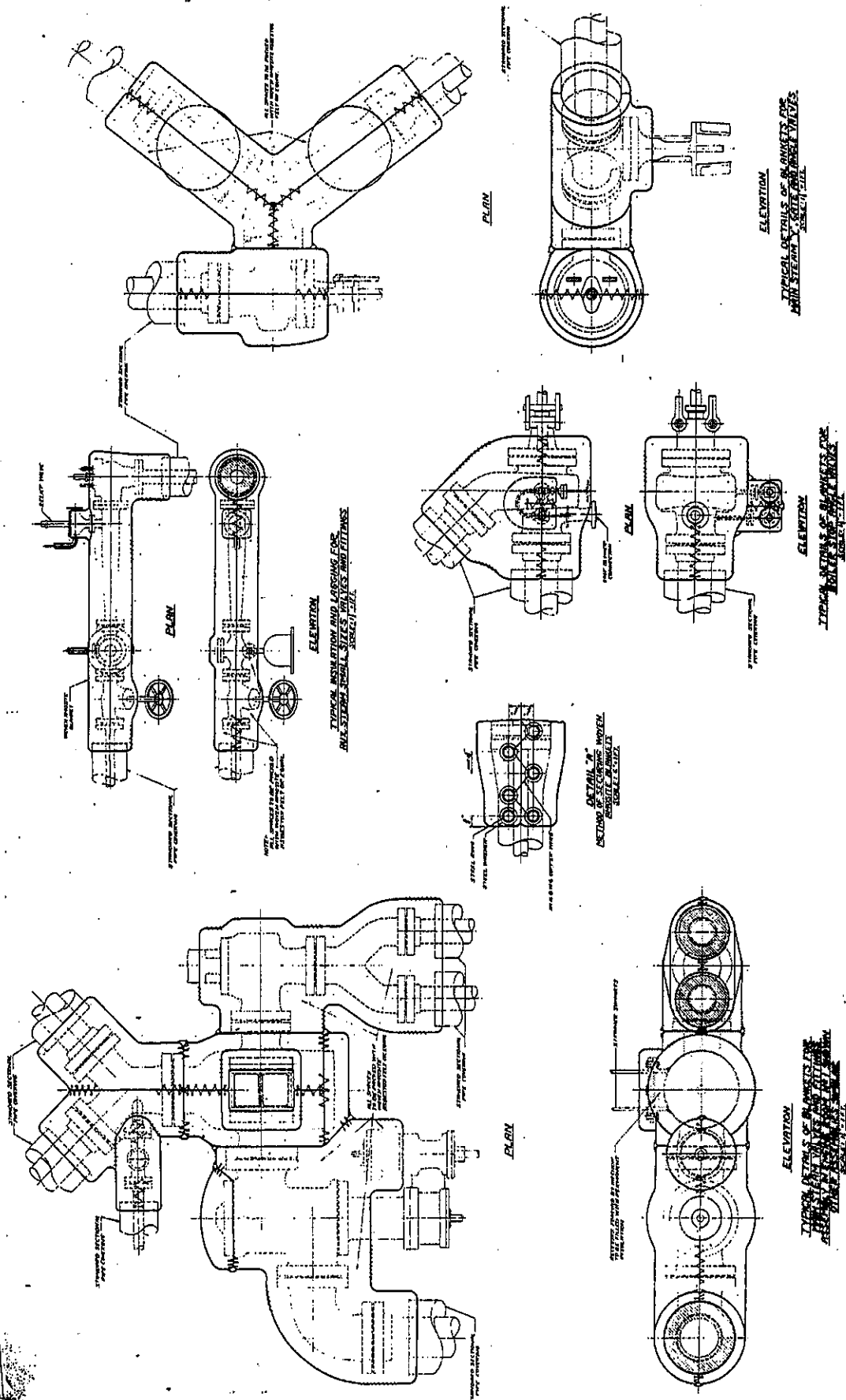


PLAN

SEE THIS PLAN INDEX
 FOR VARIATIONS OF THIS
 PLAN TO ANY VESSELS.

THIS PLAN APPLIES TO DD 692 CLASS
 2200 TON DESTROYERS

FEDERAL SHIPBUILDING
 AND DRY DOCK CO.
 KEARNY, N.J.
 DESIGN AND ENGINEERING BY
 GROSS & COX, INC.
 NEW YORK CITY



UNITED STATES DISTRICT COURT FOR THE
SOUTHERN DISTRICT OF NEW YORK

-----X	:
RICHARD A. GEORGE,	: Civil Action No.:
	:
Plaintiff,	: Index No.: 115544-04
	: (Supreme Court of New York County)
v.	:
A.W. CHESTERTON COMPANY, et al.,	: DEFENDANT CRANE CO.'S NOTICE
	: OF REMOVAL PURSUANT TO 28 U.S.C.
Defendants.	: §§ 1442 AND 1446.
-----X	:

Exhibits Cont.

1 of 2

Exhibit I

5-78

(9) Main and auxiliary condensate piping from air ejectors to deaerating heaters (130°F.).

(10) Feed booster and feed disch. piping from deaerating heaters to economizer (250°F.).

(11) Economizer outlet piping to boiler drum (340°F.).

(12) Boiler blows (490°F.).

(13) All saturated steam drains, except laundry drains, from traps to deaerating feed tank (300°F.).

(14) Laundry drains from traps to deaerating tank (250°F.).

(15) Heating system drains from traps to drain tank, heating system drain pump suction and disch., and heating system air ejector suet. (200° to 250°F.).

(16) F. O. discharge piping, except flange joints, from F. O. heaters to inlet flange of manifold on boiler fronts (250°F.) See paragraph II (1) (d).

(17) Main and aux. air ejector condensers and gland exhaust condenser drains to F.-W. drain tank. (140°F.).

(18) Distilling apparatus (See paragraph II (1) (g) and (h).

(a) Exhaust (250°F.).

(b) Vapor (130° - 198°F.).

(c) Evaporator steam head drains (200°F.).

(d) Brine from 1st, 2nd. and 3rd. effect evaporators (150°F.).

(e) air ejector condenser drain (212°F.).

(f) Evaporator feed beyond distiller inner heater (121° - 183°F.).

(g) Valves, fittings and flanges for items (b), (c), (d) and (e)

are not to be insulated.

△ (19) F.O. discharge piping on boiler fronts up to flanges on burner manifolds to be lagged with .014" galvanized sheet steel & elsewhere with FOR H-392-7 INCL.

△ CANVAS SEWED ON AND THEN TREATED WITH FLAME RETARDING SOLUTION AND WITH FIBROUS GLASS CLOTH OR TAPE SEWED OR CEMENTED ON FOR H-398 & FUTURE.

△ (20) Except as noted above and as modified by paragraph XIV, pipes, valves, fittings, and flanges of all the above systems are to be insulated with 85% magnesia and lagged with canvas (FOR H392-7 INCL. AND WITH FIBROUS GLASS CLOTH OR TAPE FOR H398 & FUTURE.

(21) Asbestos cloth cuffs not less than 6" in width are to be fitted

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 7-78

ONLY WHEN
 (7) Cover the ends of pipes lagged with canvas and fitted with portable flange covers. See Dr. No. 172826.

(22) For flange covers see paragraph No. XIV.

(23) Thickness of insulation to be as follows; see paragraph III (3)

for pipes 3/8" and below.

Temperature	Nom. Pipe Dia.	Inner Layer Thick	Outer Layer Thick
100° - 388°	1/2" to 1-1/2" incl.	7/8"	-
389° - 500°	1/2" to 1-1/2" incl.	7/8"	7/8"
100° - 338°	2" to 3-1/2" incl.	1-1/32"	-
339° - 388°	2" to 3-1/2" incl.	1-1/2"	-
389° - 500°	2" to 3-1/2" incl.	1-1/2"	1-1/2"
100° - 267°	4" to 6" incl.	1-1/8"	-
100° - 267°	6-1/2" to 10" incl.	1-1/4"	-
100° - 267°	10-1/2" & Above	1-1/2"	-
268° - 338°	4" & Above	1-1/2"	-
339° - 388°	4" to 6" incl.	1-1/8"	1-1/8"
339° - 388°	6-1/2" to 10" incl.	1-1/4"	1-1/4"
339° - 388°	10-1/2" & Above	1-1/2"	1-1/2"
389° - 500°	4" & Above	1-1/2"	1-1/2"

(24) The insulation of steam lines at the main, dynamo, distiller, and heating system air ejector nozzles shall be portable to permit easy removal and replacement when cleaning the air ejector nozzles.

(25) For details of insulation in this section see Dr. No. 172826,

"Miscellaneous Valve & Flange Covers & Pipe Insulation"

INSULATION FOR TEMPERATURES BELOW 100° F.

(1) Bilge and fire and flushing pump discharge piping and all auxiliary salt water circulating pipes above a level 24" above the floor. See II. (1) (e) to be covered as follows:

(2) ~~One layer of heavy asphalt impregnated paper which shall be lapped 4" in each direction and secured with single jute twine, lapped on 4" centers, one layer of 1" thick hair felt closely wrapped and secured with 1/2" centers, one layer of waterproof asphalt impregnated paper or fabric, and one layer of rosin paper to prevent the asphalt striking through the canvas lagging, and then lagged with canvas.~~

PIPES FOR
 (3) Flanges, valves and fittings ~~FOR~~ cold water piping to be insulated with one layer of 1" thick ~~hair felt~~ WATERPROOFED AMOSITE SLANKET and secured in place with a close

wrapping of heavy jute twine, ~~then covered with a waterproof asphalt~~ ~~FLAME PROOF PAPER LAPPED 4" IN EACH DIRECTION.~~ ~~and one layer of rosin paper to prevent the asphalt striking through the canvas lagging, and then lagged with canvas.~~ ~~ON AND TREATED WITH FLAME RETARDING SOLUTION FOR H392-7 INCL. AND WITH FIBROUS GLASS CLOTH OR TAPE SEWED OR CEMENTED ON FOR H398 & FUTURE.~~

20. WHISTLE AND SIREN STEAM/DRAIN PIPING WHERE EXPOSED TO WEATHER AND SALT SPRAY IS TO BE LAGGED WITH 1/4" THK. GALV. SHEET STEEL

VI

viii

VIII

IX

X

To be insulated as approved on Dr. No. 610-339, H.P. & Dr. No. 610-341 L.P.

8-98

XII BOILER DRUMS

To be insulated as approved on Dr. No. 680-55.

XIII REFRIGERATING PIPING

To be insulated as approved on the following drawings:

By note on Dr. No. 605-252, "Arrgt. of Piping in Ice Mach. Room," and Dr. No. 156451, "Bhd. Connections for Freon Pipes."

XIV FLANGE COVERS

(1) The insulating materials used in making flange covers are to be the same as those used for insulating the pipes and are to be of a thickness as shown on Dr. No. 172825, "Insulation for Superheated Steam Lines" or Dr. No. 172826, "Misc., Valves & Flange Covers & Pipe Insulation", to suit the service. Portable covers are to be built up in halves on galvanized wire mesh cloth having 1/2" meshes with .049" diameter wire and lagged with asbestos cloth, ~~or fibrous glass cloth~~ (FOR SUPERHEATED STEAM LINES) ~~FOR H392-TINCL. AND WITH FIBROUS GLASS CLOTH FOR H392 & FUTURE LINES,~~ and with canvas for other lines. Portable covers are to be neatly fitted and arranged for ready removal and replacement without injury.

(2) Portable covers shall be fitted on the following items only: -

- (a) All main steam valves and flanges.
- (b) All reducing and regulating valves.
- (c) Strainer bonnets.
- (d) Valve bonnets for systems operating at a temperature in excess of 250° F.
- (e) Valves and flanges for heating system mains.
- (f) Unions and valves in heating system branches where likely to injure personnel.

(3) The following items to be insulated but not made portable: -

- (a) Valves, except glands, for systems operating at a temperature of 250° F. to 1000° F., and flanges and fittings for same, except as noted above.
- (b) Flanges for systems operating at a temperature in excess of 250° F, except as noted above.

(4) Where valves and flange covers are not portable the insulation for systems for temperature of 100° F. to 500° F. shall consist of magnesia blocks smoothed over with magnesia cement, and finished with a layer of hard finish asbestos plaster, to a total thickness of within 1/8" of that of the adjacent pipes. Non-portable insulation for valves and flanges for temperatures below 100° F. to be as required by V.

XV. AUX. TURBINES AND PUMPS

To be insulated as approved on Dr. No. 135648, "Type plan showing method of lagging aux. turbines and pumps."

XVI GENERAL NOTES:

(1) Single layer magnesia or high temperature covering for pipes of sizes from 1/2" up to and including 10" shall be furnished in sections. For pipes of sizes larger than 10" the covering shall be furnished in curved segments. Double layer covering shall be furnished in two-layers of listed thicknesses as follows: In sections, for the inner layer of pipe sizes up to and including 10" and for the outer layer of pipe sizes up to and including 8"; in curved segments for the inner layer of pipe sizes larger than 10" and for the outer layer of pipe sizes larger than 8".

(2) Single layer covering shall be secured by at least 3 loops per section of 18 B.W.G. annealed hot dipped galvanized iron wire. Outer layer covering shall be applied so as to break both butt and lateral joints and each section shall be secured by at least 3 loops of No. 18 B.W.G. annealed hot dipped galvanized iron wire.

(3) Material equivalent to the insulation shall be used for pointing up and finishing sectional and segmental insulation before lagging.

(4) All insulation where exposed to chaffing or abrasion shall be lagged with .014" galvanized sheet steel.

(5) All galvanized steel metal lagging shall be painted on the inside surface with two coats of aluminum paint before installation.

(6) Where flanges are not covered the covering on pipe shall be extended to as near the flanges as practicable and shall be completely covered by the lagging.

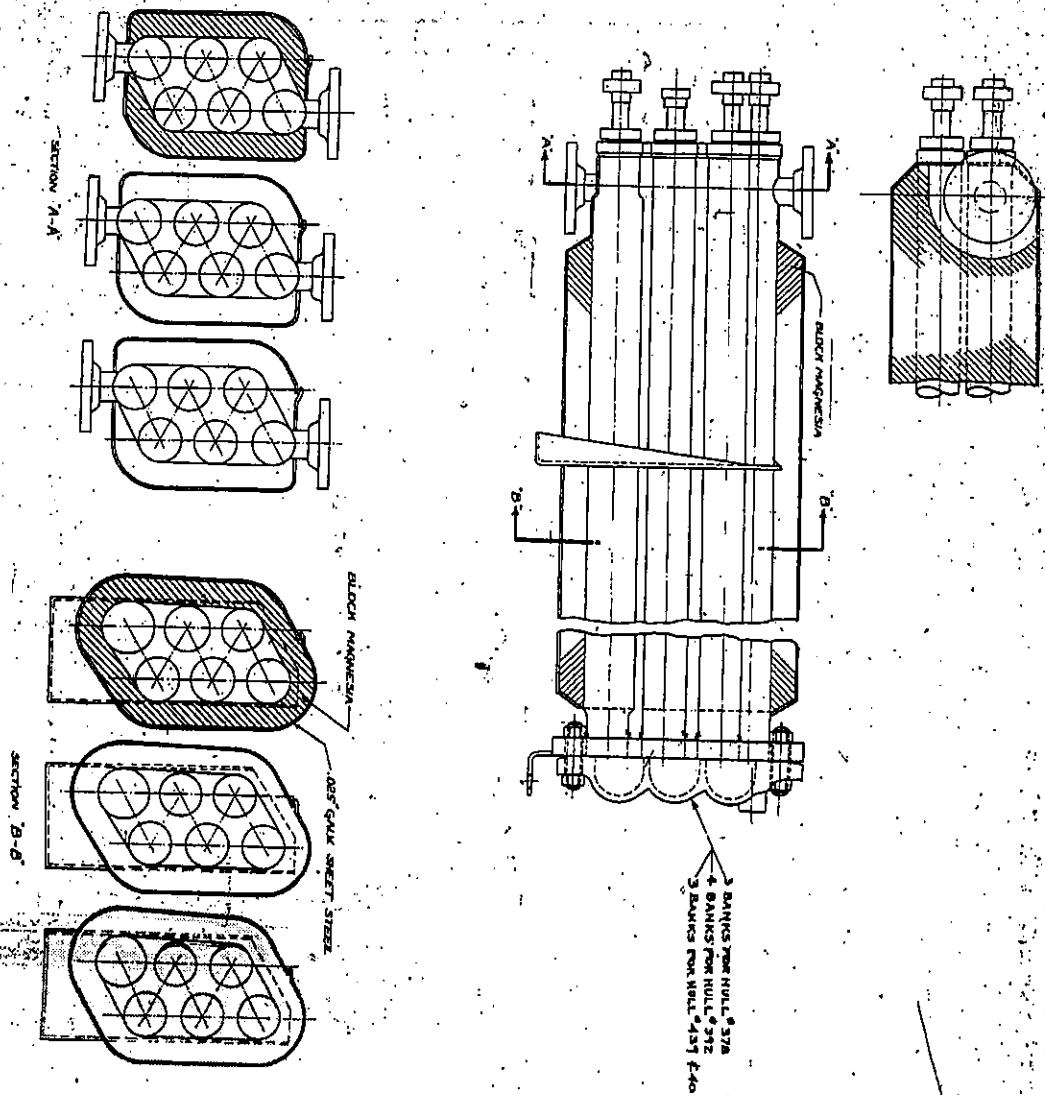
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7

FIBROUS GLASS CLOTH.
 (7) Canvas and asbestos cloth lagging shall be properly sized and painted with at least two coats of standard lead and oil in color as specified, except that where within 18" of surfaces of lagging of superheated steam pipes or machine surfaces it shall have two coats of Bureau formula No. 11 aluminum paint. For ~~identification of pipe systems~~ identification of pipe systems, see ~~drawing No. 15488, color lagging~~ 174834, SERVICE FOR PIPING.

(8) Lap joints of metal lagging to be secured with brass bands fastened with round head screws or to have a bead in the exposed edge and be secured with hardened self tapping metal screws in punched holes.

(9) All work to be done in a thoroughly first class and workmanlike manner, subject to the approval and acceptance of the Government Inspectors.

(10) Other systems not tabulated, and with operating temperatures below 100° F, are not to be covered or lagged.

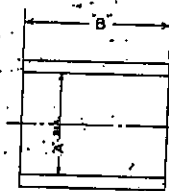
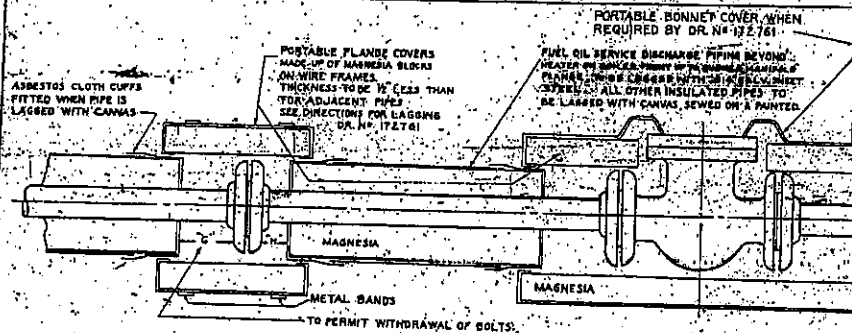


INSULATION TO BE OF 85% MAGNESIA BLOCKS FIRMLY SECURED WITH 17 HIGH GALVANIZED WIRE NETTING. FILL ALL JOINTS WITH INSULATION AND COMPLETELY COAT THE WIRE NETTING WITH .025 GALV SHEET STEEL.

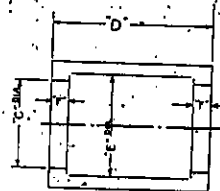
REV	DATE	BY	CHKD
1	1/15/57	3/2	
2	1/15/57	4/14/57	

<p>BU ENG N-67-15350-2</p> <p>BU ENG N-67-15350-3</p> <p>BU ENG N-67-15350-4</p>		<p>PRINTS</p> <p>21 P</p>
<p>ALTERNATIONS</p> <p>1. 1/15/57</p> <p>2. 1/15/57</p>		<p>130446</p>

NO. SIZ	TYPE A			TYPE B							
	A	B	C	D	E	F	G	H	I	J	K
1	4 $\frac{1}{2}$	9 $\frac{1}{2}$	1 $\frac{1}{2}$							2 $\frac{1}{2}$	1 $\frac{1}{2}$
2	6 $\frac{1}{2}$	10 $\frac{1}{2}$	1 $\frac{1}{2}$							3 $\frac{1}{2}$	1 $\frac{1}{2}$
3	7 $\frac{1}{2}$	10 $\frac{1}{2}$	1 $\frac{1}{2}$							3 $\frac{1}{2}$	1 $\frac{1}{2}$
4	9 $\frac{1}{2}$	10 $\frac{1}{2}$	1 $\frac{1}{2}$							3 $\frac{1}{2}$	1 $\frac{1}{2}$
5				1 $\frac{1}{2}$	6 $\frac{1}{2}$	5 $\frac{1}{2}$	2	1 $\frac{1}{2}$		3 $\frac{1}{2}$	1 $\frac{1}{2}$
6	8 $\frac{1}{2}$	11 $\frac{1}{2}$	2 $\frac{1}{2}$							3 $\frac{1}{2}$	1 $\frac{1}{2}$
7	9 $\frac{1}{2}$	12 $\frac{1}{2}$	2 $\frac{1}{2}$							4 $\frac{1}{2}$	1 $\frac{1}{2}$
8	10 $\frac{1}{2}$	12 $\frac{1}{2}$	2 $\frac{1}{2}$							4 $\frac{1}{2}$	1 $\frac{1}{2}$
9	11 $\frac{1}{2}$	14 $\frac{1}{2}$	3 $\frac{1}{2}$							5 $\frac{1}{2}$	1 $\frac{1}{2}$
10	11 $\frac{1}{2}$	14 $\frac{1}{2}$	3 $\frac{1}{2}$							5 $\frac{1}{2}$	1 $\frac{1}{2}$
11											
12	12 $\frac{1}{2}$	15 $\frac{1}{2}$	3 $\frac{1}{2}$							6 $\frac{1}{2}$	2 $\frac{1}{2}$
13	13 $\frac{1}{2}$	15 $\frac{1}{2}$	3 $\frac{1}{2}$							6 $\frac{1}{2}$	2 $\frac{1}{2}$
14	14 $\frac{1}{2}$	16 $\frac{1}{2}$	3 $\frac{1}{2}$							7 $\frac{1}{2}$	2 $\frac{1}{2}$
15	16 $\frac{1}{2}$	19 $\frac{1}{2}$	3 $\frac{1}{2}$							8 $\frac{1}{2}$	2 $\frac{1}{2}$
16	2 $\frac{1}{2}$			2 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$	1	3 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2 $\frac{1}{2}$



TYPE A
USED WHERE DIA. OVER PIPE INSULATION IS LARGER THAN FLANGE DIA.



TYPE B
USED WHERE FLANGE DIA. IS LARGER THAN DIA. OVER PIPE INSULATION

FLANGE COVERS FOR REDUCED SAT. STEAM (50° PRESS.) (366°)
—101-300° FLANGE—

PIPE SIZE	TYPE A	TYPE B	TYPE C	TYPE D	TYPE E	TYPE F	TYPE G	TYPE H
1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3/4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1 1/4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
5"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"

FLANGE COVERS FOR ECONOMIZER OUTLET PIPING TO BOILER DRUM (240° F) 600° FLANGE

PIPE SIZE	TYPE A	TYPE B	TYPE C	TYPE D	TYPE E	TYPE F	TYPE G	TYPE H
1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3/4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1 1/4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
5"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"

FLANGE COVERS FOR MAIN SATURATED STEAM—600° FLANGE

PIPE SIZE	TYPE A	TYPE B	TYPE C	TYPE D	TYPE E	TYPE F	TYPE G	TYPE H
1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3/4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1 1/4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
5"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"

FLANGE COVERS FOR HEATING SYST., ETC.—100° & BELOW FLANGE—

PIPE SIZE	TYPE A	TYPE B	TYPE C	TYPE D	TYPE E	TYPE F	TYPE G	TYPE H
1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3/4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1 1/4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
3 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
4"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
5"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
6"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
7"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
8"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
9"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
10"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
12"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
15"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"
18"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"

APPROVED FOR AIRCRAFT CARRIER
NOS. 21, 22, 23
BY [Signature]
SUPERVISOR OF WORK

NOTES:
1. PORTABLE COVERS TO BE INSTALLED ONLY WHERE CALLED FOR BY SECTION 332, OR DR. 172761.
2. REFERENCE DRAWINGS 172826—INSULATION FOR SUPERHEATED STEAM LINES. 172761—DIRECTIONS FOR INSULATION & LAGGING.

PANEL NAME	DESCRIPTION	DATE	BY	CHKD
CV-211 R.S.	U.S.S. RANDOLPH	11-28-42		
CV-200 S.E.	U.S.S. TIGER	11-28-42		
CV-20 U.S.S. TIGER	U.S.S. TIGER	11-28-42		
CV-17 U.S.S. BUNKER HILL	U.S.S. BUNKER HILL	11-28-42		
CV-16 U.S.S. CABOT	U.S.S. CABOT	11-28-42		
CV-15 U.S.S. RANDOLPH	U.S.S. RANDOLPH	11-28-42		
CV-14 U.S.S. HANCOCK	U.S.S. HANCOCK	11-28-42		
CV-13 U.S.S. FRANKLIN	U.S.S. FRANKLIN	11-28-42		
CV-12 U.S.S. HANCOCK	U.S.S. HANCOCK	11-28-42		
CV-11 U.S.S. WINTHROP	U.S.S. WINTHROP	11-28-42		
CV-10 U.S.S. BOWEN	U.S.S. BOWEN	11-28-42		
CV-9 U.S.S. EDDY	U.S.S. EDDY	11-28-42		
CV-8 U.S.S. EDDY	U.S.S. EDDY	11-28-42		

THE NEWPORT NEWS SHIPBUILDING & DRY DOCK COMPANY
NEWPORT NEWS, VIRGINIA
ENGINEERING DEPARTMENT

DRAWING NO. 172826

SCALE: _____
DRAWN BY: _____
CHECKED BY: _____
DATE: _____

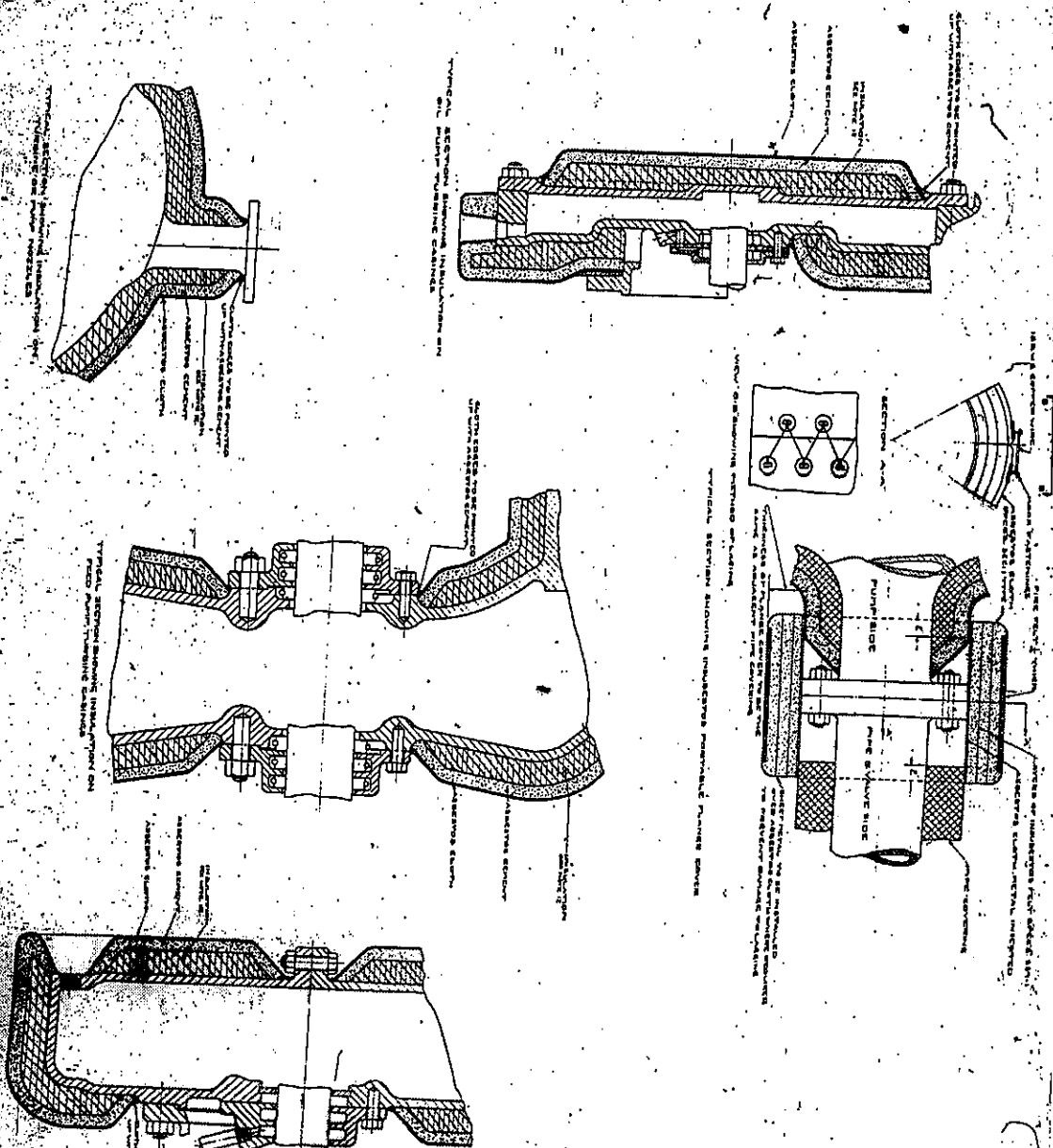
ACTION BY BUREAU OF SHIPS
LETTER FILE _____
DATE: _____

FORWARDED TO BUREAU
PLAN
EXAMINED AND FOUND CORRECT
DATE: _____

MISCELLANEOUS VALVE & FLANGE COVERS & PIPE INSULATION

BUREAU OF SHIPS PLAN NUMBER
CV-9-S3902-7 ALT. 1

E 26



GENERAL NOTES

[illegible]

APPROX 100
LIGHT CRISPER
CUT. 4.00/2.00

AIRCRAFT CARRIER
 NO. 1
 D. J. L.

ATTACHED FOR
LIGHT CRUISERS
MOS. 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868

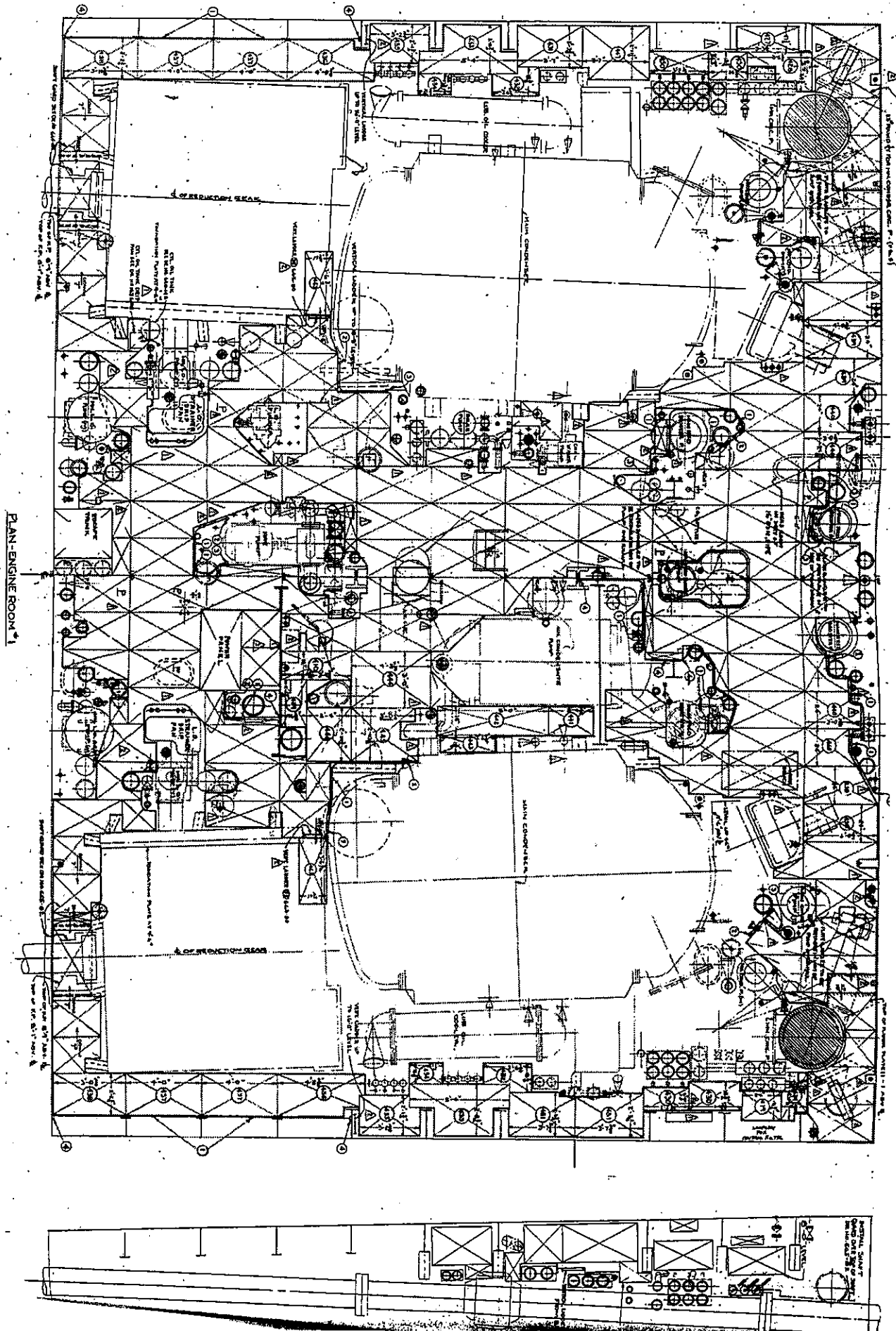
1. The first part of the document is a list of names, each followed by a number in parentheses. The names are: "John (1)", "Mary (2)", "Robert (3)", "Elizabeth (4)", "William (5)", "James (6)", "Thomas (7)", "Richard (8)", "Henry (9)", "George (10)", "Edward (11)", "Charles (12)", "Francis (13)", "John (14)", "Mary (15)", "Robert (16)", "Elizabeth (17)", "William (18)", "James (19)", "Thomas (20)", "Richard (21)", "Henry (22)", "George (23)", "Edward (24)", "Charles (25)", "Francis (26)".

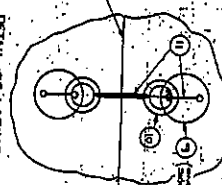
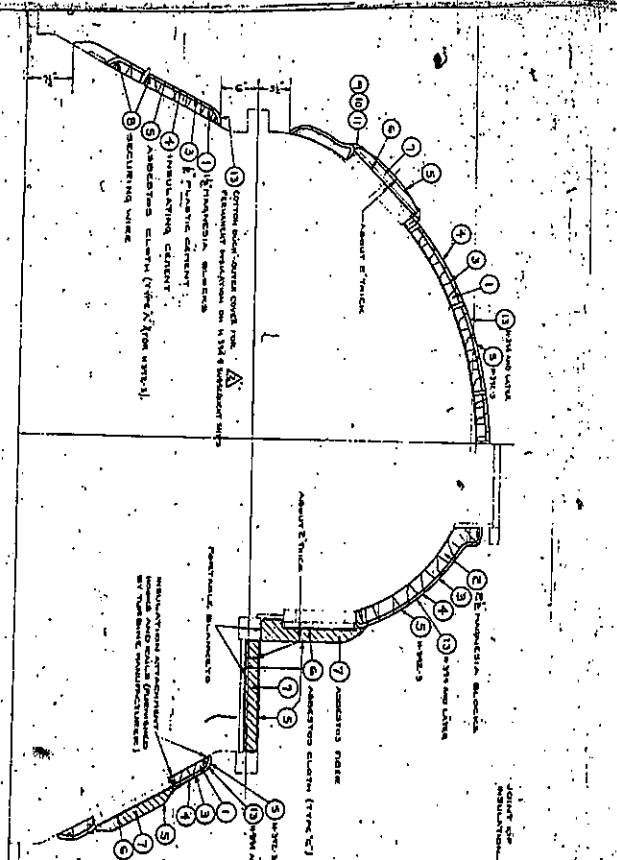
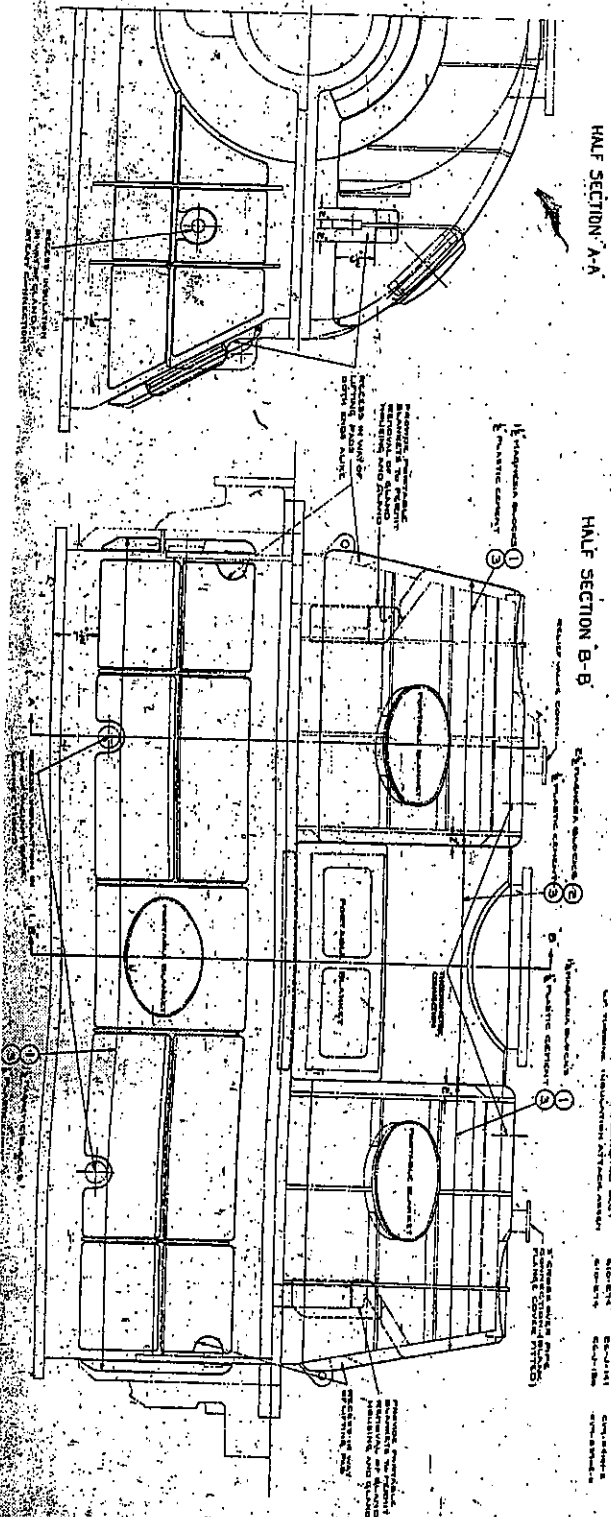


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LAGGERS AND TURNERS
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DETAIL OF LACING
RINGS AND WASHERS

1. **ELIGIBILITY** depends on:
 2. **PLASTIC** 100%
 3. **PERMANENT** 100%
 4. **STAINING** 100%
 5. **HAIRLESS** 50%
 6. **NO SCARS** 50%
 7. **NO TATTOOS** 50%
 8. **NO BLEMISHES** 50%
 9. **NO DISCOLORATION** 50%
 10. **NO DISFIGUREMENT** 50%
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 99. **NO DISFIGUREMENT** 50%
 100. **NO DISFIGUREMENT** 50%

LIST OF MATERIALS

SECRET

2007

1. The first step in the process is to identify the problem or issue that needs to be addressed. This involves gathering information and understanding the context of the problem.

LIST OF MATTER

11

1. *Staphylococcus aureus* (100%)

[illegible][illegible]

NAME

DATE OF BIRTH

PLACE OF BIRTH

DATE OF ENTRY

DATE OF DEPARTURE

DATE OF RETURN

DATE OF EXPIRATION

Holland

1-1-11

DRAWING NO. 17276

APPROVED *J.H.H.*

APPROVED

DATE 3-20-42
FOR SUPERVISOR OF SHIPBUILDING

DATE _____ NO. _____

**FORWARDED
TO BUREAU**

PLAN

EXAMINED AND FOUND CORRECT

SUPERVISOR OF SHIPBUILDING
U.S.N.







DATE _____

DIRECTIONS FOR INSULATION AND LAGGING OF PIPES AND AUXILIARIES UNDER COGNIZANCE OF BUREAU OF ENGINEERING 11 SHEETS

11 SHEET

BUYER BEHAVIOR LEARNING

4-ATT

		IN PAR. IX (19) & (20), V (3) X (1), (2), (3) FIBROUS GLASS REPLACES CANVAS LAGGING FOR HULLS 398 & 400. FUTURE AS PER BU. SHIP'S MULTI-ADD. LETTER 529-1 (648), EN 28/AZ-II OF FEB. 1, 1944. FIBROUS GLASS MARKED SEWED OR CEMENTED ON AS PER OUR MEMO TO S.O.S. DATED MAY 18, 1944. IN PAR. IX (4) FOR WITH FIBROUS GLASS TAPE DELETED AS ASBESTOS CLOTH IS ORDERED FOR ALL SHIPS. IN PAR. IX (21) ASBESTOS CUFFS TO BE FITTED ONLY WHERE CANVAS LAGGING IS USED; IN PAR. X (1) FIBROUS GLASS CLOTH DELETED FOR SUPPLY. STEAM AND ADD'D FOR OTHER LINES FOR H358 & FUTURE. (REMARKS: H358 & FUTURE LAGGING)	5-23-44 W/E.C.	5/25/44	O.L.C. ESW
		21. ANCHOR WIRE USED IN LINE OF HEAVY LIFT TRUNK DELETED IN PAR. X (1) & (2)	1-20-44 W/E.C.	1/25/44	O.L.C. Bo
		PAR. IX (8) & (9) ALTERED FOR H-410, 44G & 447 TO SUIT RELOCATION OF GEN. SETS (EMERG. DIESEL)	2-1-44 W/E.C.	1/6/44	O.L.C. Bo
		PLAN WIRE APPLICABLE TO (CY22 & CY46) H446 & H447 AND (CY67) BETHL.	11-4-43 W/E.C.	11-8-43	O.L.C. Bo
		IN PAR. I, WATER PROOFED AMOSITE BLANKET WAS HAIR FELT. PAR. X (23A) & (23B) METHOD OF APPLYING INSULATION ALTD. TO SUIT CHANGE IN MATERIALS FROM "HAIR FELT" TO "WATER PROOFED AMOSITE BLANKET" IN ACCORDANCE WITH BU. LET. 529-1 (648) OVER EN 28/AZ-II OF 4-17-43.	5-8-43 W/E.C.	5/11/43	O.L.C. Bo
		IN PAR. IX (19), CANVAS WAS FIBROUS GLASS TAPE. IN PAR. X (1) AND X (2), CANVAS WAS ASBESTOS CLOTH OR FIBROUS GLASS CLOTH. IN PAR. X (21) IDENTIFICATION OF FIBROUS GLASS WITH COLOR BANDS. ALTERNATED WITH BU. LET. 529-1 (648) OVER EN 28/AZ-II OF 4-17-43 AND AS ORDERED BY CAPT. GAYHART ON 4-17-43.	4-23-43 W/E.C.	4/26/43	O.L.C. Bo
PANEL	MARK	DESCRIPTION	DATE ISSUED	DATE FILED	BY
		ALTERNATIONS	11/10/43	11-18-43	W.E.C.

ULL NO. N.N. DR NO. SHEET NO. 2 OF 11 SHEETS
172761

I. MATERIALS REFERRED TO IN THE FOLLOWING DIRECTIONS ARE TO BE ORDERED TO THE FOLLOWING SPECIFICATIONS:

High temperature cement	32-C-14
High temperature insulation (Light weight)	32-P-5.
Magnesia insulating covering & cement (Light weight)	32-M-8.
Asbestos rope & wick	32-P-5
Canvas	24-D-5.
WATER PROOFED AMOSITE BLANKET	COMMERCIAL
Half felt	32-P-5.
Galv. steel sheet lagging	47-S-10.
Paper	High grade commercial.
Asbestos cloth (Type "B")	32-C-11.
Fibrous glass tape & CLOTH	32-C-15

II. THE FOLLOWING SYSTEMS OR PARTIAL SYSTEMS WILL NOT BE INSULATED:

- (1) (a) Condensate suction and discharge piping between condenser and air ejector, air ejector air suction, and vacuum drain.
- (b) Diesel engine exhaust where exposed to atmosphere.
(See painting Schedule Dr. No. 172813).
- (c) Escape piping in uptake spaces.
- (d) All fuel oil piping, except that service discharge between F.O. heaters and inlet flange of manifolds on boiler fronts is to be insulated.
- (e) All piping below floor level where liable to come into contact with bilge water, bilge, fire & flushing discharge, and auxiliary salt water circulating pipes below the level of 24" above the floor plates, and certain individual leads above this level when approved by an Officer of the S.O.S. Office.
- (f) Auxiliary exhaust to condensers beyond back pressure valve.
- (g) Distiller air ejector drain (100° F.).
- (h) Distiller condensate P. suction & disch. up to test tank (95° F.).
- (i) Steam & drain piping in floodable voids. (See painting schedule Dr. No. 172813).

MULL. NO.

NN DR. NO.

302

172813

SHEET NO. 3 OF 11 SHEETS

- 98

- (j) Heating system drain lines between thermo-heaters and thermostatic traps where not exposed to outside temperature or weather are not to be covered or lagged, except where injury to personnel is likely. Drain lines in pantries and galleys from steam tables, water heaters, etc. to thermostatic traps are not to be covered or lagged.
- (k) Gland vapor exhaustor discharge to atmosphere except where likely to injure personnel.
- (2) ~~MAIN AIR EJECTORS~~
Covering for steam and exhaust pipes which may be near a magazine is to be double the standard thickness.
- (3) Where pipes 3/8" nom. dia. and below in steam, exhaust, and steam drains are required to be insulated to conserve heat or prevent burning personnel, they shall be covered to a total thickness of not less than 1/4" with layers of asbestos cloth weighing approximately 2-1/4 lbs. per Sq. Yd. and sewed with No. 25 copper wire, without canvas lagging. Gauge lines need not be insulated except where there is danger of burning personnel.

III. INSULATION FOR TEMPERATURES 501° F. AND ABOVE.

- ✓ (1) Superheated steam and drains up to and including H.I. traps (850°F.)
- ✓ (2) Diesel engine exhaust, including muffler (850°F.) See (8) & (9) below.
- ✓ (3) Superheated escape up to 4th. dk. (810° F.)
- CUT F. 2
439 → (4) Steam to soot blowers (850°F.)
- (5) The above includes all pipes, valves, fittings and flanges.
- ✓ (6) Pipes 1/2" to 1-1/2" diameter inclusive, superheated escape pipes and soot blower piping, to be insulated with single layer of high temperature insulation. Pipes larger than 1-1/2" to be insulated with two layers, the inner layer to be high temperature and the outer layer to be 85% magnesia. Piping to be lagged with asbestos cloth or with fibrous glass tape.

8-40

(7) Thickness of insulation to be as follows: See paragraph III (4) for pipes 5/8" nom. dia. and below.

Temperature	Nom. Pipe Dia.	Inner layer Thick.	Outer Layer Thick.
501° - 1050°	1/2" to 1-1/2" incl.	2"	-
" " "	2" & 2-1/2"	1-1/4"	2"
" " "	3"	1-1/2"	2"
" " "	3-1/2"	1-1/4"	2"
" " "	4"	1-1/2"	2"
" " "	4-1/2"	1-1/4"	2"
" " "	5" to 7" incl.	1-1/2"	2"
" " "	8" & Above	1-1/2"	2-1/2"

(8) Diesel engine exhaust piping in storerooms on 4th. deck between (for H-392-S only) frs. 176-184 St'd'd for H-410, 446 & 447 frs. 79-84 P. & 142-150 centerline to have 2-1/2" thick insulation

for both the inner and outer layers and covered with galvanized sheet steel .014" thick.

(9) Diesel engine muffler to be covered to a total thickness of 4", H-392-S only. For H-410, 446 & 447 Ford muffler covered, Aft muffler painted only.

(10) For flange covers see paragraph No. XIV.

(11) For details of insulation in this section see Dr. No. 172825, "insulation for superheated steam lines".

IV. INSULATION FOR TEMPERATURES FROM 100°F. to 500°F.

(1) Saturated steam under full boiler pressure, (490°F.).

(2) Steam to F.O. heaters and drains from same up to and including traps (490°F.).

(3) Reduced saturated steam and steam to F.O. heating coils in F.O. tanks and drains from same up to and including traps (366°F.).

(4) Reduced steam to laundry (100# pressure) and drains up to and including traps (338°F.).

(5) Heating system, constant and intermittent steam, and drains up to and including traps (297°F.). See paragraph II (1) (i).

(6) Receiver pipes between H.P. and L.P. turbines (420°F.).

(7) Auxiliary exhaust, gland sealing and leakoff, and atmospheric exhaust (250°F.).

(8) Saturated escape piping up to 4th. dk. and superheated safety valve actuating line (about 350°F. insulate for 250°F.) (See III for superheated escape.)

Exhibit J

ENCLOSURE II

DRAFT

ENCLOSURE II



DEPARTMENT OF THE NAVY
OFFICE OF THE CHIEF OF NAVAL OPERATIONS
WASHINGTON, D.C. 20350

IN REPLY REFER TO
Ser 454D/318571
8 February 1979

Dear Mr. Hughes,

In further response to your inquiry of October 5, 1978 for information on asbestos use in the Navy's shipbuilding and ship repair operations, it is estimated that the quantity of thermal insulation used on each major class of ships is as follows:

<u>Ship Class</u>	<u>Estimate of Thermal Insulation (lbs)</u>
Destroyer - DD	87,634
Guided Missile Cruiser - CGN	123,770
Submarine - SSN	62,465
Replenishment Oiler - AOR	78,515
Oceanographic Research Ship - AGOR	*
Large Harbor Tug - YTB	6,858
Fuel Oil Barge - YON	**

* Weight control reports for AGOR class ships have not been prepared. Data unavailable.

**Weight control reports for YONs do not make any reference to thermal insulation.

As noted in my earlier response of January 5th, this information represents the weight of thermal insulation installed and does not include asbestos used in other applications, such as pipe hanger liners, gaskets, etc.

I hope that this information satisfactorily answers your question regarding the extent of thermal insulation being used in the Navy's shipbuilding and ship repair operations.

Sincerely,

T. J. B. [Signature]
T. J. B. [Signature]
Vice Admiral, U.S. Navy
Deputy Chief of Naval
Operations (Logistics)

Mr. Robert F. Hughes
Assistant Director
U. S. General Accounting Office
Human Resources Division
Washington, D C. 20548

13

B 304153

DRAFT

Exhibit K

ADDRESS SUPERVISOR OF SHIPBUILDING, U.S. NAVY
AND REFER TO MR.

CL5501ass/81-7 (5970)

NAVY DEPARTMENT

ENCLOSURES

OFFICE OF SUPERVISOR OF SHIPBUILDING

Camden, N. J.

10 March 1942

From: Supervisor of Shipbuilding, U.S.N., Camden, N.J.
To: New York Shipbuilding Corporation.
Subject: CL55 CLASS CRUISERS - Deberating Steel Tanks
Preliminary Instruction Book - Cochrane
Corporation, Mrx.

References: (a) N.Y.S. Ltr 9-144-42 of 21 February 1942
(b) Cochrane Dr. G-1016; CL55-856-1, Alt. 3
(c) Cochrane Dr. G-1015; CL55-856-3, Alt. 3
(d) Cochrane Dr. G- 869
(e) Belfield Dr. 86-8524
(f) N.Y.S. Dr. 423-580-87; CL55-848-7, Alt. 7

Enclosure: (A) One copy of subject instruction book.

1. Enclosure (A), submitted with reference (a),
is returned herewith approved, subject to the following
comments:

(a) The subcontractor's comments pertaining
to the composition of the final copies have been
noted and are considered satisfactory.

(b) All cuts or reproductions of plans should
agree with the latest approved plans, and the names
and numbers of parts should be complete and identical
with those on the approved plans.

(c) The pages contained in the book should be
numbered consecutively and the index revised accord-
ingly. In order to simplify the identification of
the pages to be modified, the pages containing printed
matter have been numbered in pencil in this office.
This system of numbering the pages does not govern
the numbering of the pages in the final copies.

(d) On page 3, under "General Function, De-
sign and Allocation", first paragraph, delete the

No. CL550class/SI-7 (5970)

10 March 1942

To: New York Shipbuilding Corporation

words "furnished by others".

(e) On page 3, under "General Function, Design and Allocation" first paragraph, the height of 3'-10" for the upper section and the height of 7'-11" for the lower section are apparently meant for inside dimensions, since inside diameters are given. The heights should be checked against reference (b) and noted as inside dimensions.

(f) On page 3, under "Performance Data" add the pressure of the feed water at the inlet in agreement with reference (c).

(g) On page 4, add the figure number to the print of the General Assembly. The line work on this figure should be distinct.

(h) On page 5, under "Drawings Supplied" delete references (d) and (e), and substitute the drawing number of the correct spillover valve.

(i) On page 5, under "Drawings Supplied" add the headings "Vendor's Dr. No." and "BuShips Type B" Dr. No." in the proper place. The BuShips Drawing Numbers should be complete.

(j) On page 6, under "General Description", seventh line after "heats" add "it".

(k) On page 6, under "Vent Condenser and Preheater" add detailed information covering the installation and the operation of the vent condenser and preheater.

(l) In connection with comment in paragraph 1(b) above, it is noted that part names and numbers in the text do not entirely agree with part names and numbers in the illustrations. Attention is called to the following discrepancies, which should be corrected:

(1) Page 6, under "Atomizing Valve" piece

No. CL55Class/S1-7 (5970)

10 March 1942

To: New York Shipbuilding Corporation

2-19 is "valve disk" in text and "valve flange" in illustration. Piece 2-5 is "valve disk ring" in text and "key" in illustration.

(2) Page 9, under "Dash Pot" piece 3-52 is "clevis rod" in text and "link" in illustration.

(3) On page 13, add a description of the spillover valve.

(4) On page 14, under "Operation" amplify the instructions for the use of the manually controlled spillover valve.

(5) A diagrammatic sketch of the piping to the deaerating feed tank showing the spillover valve should be included in the instruction book. This sketch should be similar to the "Diagrammatic Arrang. of Deaerating Feed Tank Connections" as shown on reference (f).

2. It is understood that the final copies will also be corrected as necessary to show the conversion of certain of the CL Class vessels to CV Class vessels.

3. The subcontractor should be advised not to release final copies to the "following" yards until the final copies for the U.S.S. CLEVELAND have been approved.

G. H. WOOD
By Direction

cc: BuShips w/cc (a); copy (a)
SupShip, Quincy w/cc (a)
" N.H. w/cc (a)
" E.Y. w/cc (a)
" Phila. w/cc (a)
Mr. Mills
Mr. McGinnis

9-1444-42

February 21, 1942.

TO: SUPERVISOR OF SHIPBUILDING, U.S.N., Camden, N.J.

SUBJECT: CL55 CLASS CRUISERS
Instruction Books for Deaerating Feed Tanks
Forwarding preliminary copies for approval.

Reference: (a) Genl. Specs. for Machinery, Sect. SI-1-b, Edition of Sept. 1, 1937
(b) Sup.Ship.lettr. CL55-56/SI-7(1), April 23, 1940.

ENCLOSURES: (Herewith)

No. & Kind

(A) Cochrane Corp. Description & Instructions for
Operation & Maintenance of Cochrane Deaerating
Feed Tanks,

3 Copies

1. ENCLOSURE (A), as required by References (a) and (b), is submitted herewith for approval for subject vessels.

2. The subcontractor advises that the final instruction books will comply with all the requirements of Reference (a), and that they will be bound in black-leatherette or fabricoid covers, embossed with gold letters, and the front cover will contain the information shown on the first page of ENCLOSURE (A). The fly leaf inside the front cover will contain the information shown on the second page of ENCLOSURE (A).

NEW YORK SHIPBUILDING CORPORATION

OK/s
ENCLOSURES:
3. Books

By A. H. Mills,
Marine Engineer.

K.M.A.27

ADDRESS SUPERVISOR OF SHIPBUILDING, U.S. NAVY

AND REFER TO AS:

OL55 Class/S1-7
Serial 16781

NAVY DEPARTMENT

ENCLOSURES

OFFICE OF SUPERVISOR OF SHIPBUILDING
Camden, New Jersey

4 May, 1943.

From: Supervisor of Shipbuilding, USN., Camden, N.J.
To : New York Shipbuilding Corporation.
Subject: US LIGHT CRUISERS - OL55 Class - Instruction
Book for Fuel Oil Service Pumps, Fuel Oil
Booster & Transfer Pumps, Lubricating Oil
Service Pumps - Approval of Final Copies.

References: (a) NYSCorp. ltr. 9-467-43/15N, 10 March
1943.
(b) NYSCorp. ltr. 2-1525-43/15N, 30 March
1943.
(c) DeLaval Steam Turbine Co. ltr. (NYSCorp.
No. 15629), 27 March 1943.
(d) SupShip, Camden ltr. OL55Class/S1-7;
CV220Class/S1-7, Serial 2529, 24 July
1942.
(e) BuShips ltr. OL55Class/S55(5647) over
OL55Class/S45, 11 Sept. 1942, quoted
in SupShips, Camden ltr. OL55Class/S1-7;
CV220Class/S1-7, Serial 8433, 14 Sept.
1942.
(f) SupShip, Camden ltr. OL55Class/S1-7,
CV220Class/S1-7, Serial 10462 of 29
Sept. 1942.
(g) SupShip, Camden ltr. OL55Class/S45/S55,
Serial 6783, 10 March 1943.

1. The final copies of the subject instruction
book, forwarded by reference (a) and commented on by refer-
ence (c), are approved subject to the following comment:

(a) Since the book applies to all of the OL55
Class Light Cruisers, it will be necessary to modify the
information therein to show the change in turbine back
pressure from 15 to 20 p.s.i. as noted in reference (g)
for OL105 and up. These modifications should include
changes and/or corrections to rating and operating data,
steam guarantees, test curves, applicability of test
curves in books furnished, etc.

5120987

OL55 Class/SI-7
Serial 16781

6 May 1943.

To: NYSCorp.

(b) Comply with the last sentence in paragraph 2 (c), paragraph 2 (e), and the last sentence in paragraph 2 (f) of reference (e).

(c) On page 68, fourth line from bottom of page, change " - - - Low Voltage Protection" to " - - - Low Voltage Release".

(d) On page 71, line 18, between the words "appreciably" and "by" insert the word "affected".

2. The list of parts as shown is acceptable, however, for future books it is desired that the manufacturer's drawing for each part be indicated.

3. It is requested that the vendor be notified to release a sufficient number of copies of the subject book to the "following" yards to satisfy their immediate needs prior to making corrections required by paragraph 1 above. The required correction inserts should be furnished all interested activities as soon as practicable.

4. By copy of this letter the Supervisors of Shipbuilding at the "following" yards are informed of this action and requested to advise the respective yards as to the number of copies of the subject book required at this time.

G. H. WOOD
By Direction

cc: BuShips, w/cc(a) to (c), incl.
SupShip, Newport News, w/cc(a) to (c), incl.
" Quincy w/do:
" Phila. w/do:
Mr. Mills (NYC)

CVAG/SL/858(5733)
Ser 573-73

14 MAR 1958

From: Chief, Bureau of Ships
To: Commander, New York Naval Shipyard

Subj: CVA 64, Pumps, Distiller Brine Overboard Distiller Sea Water
Heater Drain and Distiller Distillate, technical manuals for

Ref: (a) NAVSHIP HX 1tr 252:PMWb CVAG/SL/8 of 21 Feb 1958

Encl: (1) One copy of Approval and Procurement Record Page

1. NAVSHIP number 347-306 is assigned to the technical manual forwarded
by reference (a) for subject equipment, manufactured by Buffalo Forge
Company, on contract N140(131)6131J.

2. An Approval and Procurement Record Page similar to enclosure (1)
should be included in the final manuals.

Copy to:
949
922

RAYMOND E. BROWN
By Direction

Prepared by F. Washington, Ext. 63968
Typed by P. Donahue, 3/3/58
R/Ser 2241104-58

SND-NYNA-SEN-57

PLEASE ADDRESS REPLY AS FOLLOWS

COMMANDER
NEW YORK NAVAL SHIPYARD
NAVAL BASE
BROOKLYN, N. Y.

NEW YORK NAVAL SHIPYARD

No. 252:FIM:b
CVA64/51/8

From: Commander, New York Naval Shipyard
To: Chief, Bureau of Ships (In duplicate)
Buffalo Pumps, Inc., North Tonawanda, N.Y.
Via Inspector of Naval Material, Buffalo, N.Y.
(n quadruple)

Subj: CONSTELLATION (CVA64); Contract N140(131)61514B;
Distiller Brine Overboard Pump, Distiller Sea Water
Heater Drain Pump and Distiller Distillate Pump,
Technical Manual; Approval of

Ref: (a) Buffalo Pumps, Inc. ltr dtd 26 Sep 1957
(b) Buffalo Pumps, Inc. ltr dtd 30 Jan 1958
(c) Mil. Spec. MIL-M-150710 dtd 10 Sep 1957

Encl: One (1) copy each to BUSHIPS and Contractor
(1) PRELIM Tech. Manual - Distiller Brine Overboard Pump,
Distiller Water Heater Drain Pump, and Distiller
Distillate Pump - (File No. 247)

BUREAU OF SHIPS

1. Enclosure (1), approved by this Shipyard for final printing,
is forwarded for assignment of a NAVSHIPS number.

2. Twelve (12) copies of the final manual will be furnished to
the Ships Parts Control Center, Mechanicsburg, Pa. for stock
approximately sixty (60) days from the date of assignment of a
NAVSHIPS number.

BUFFALO PUMPS, INC.

3. Enclosure (1), received as enclosure to reference (a) and
referred to in reference (b), has been reviewed and approved
subject to the following comments:

a. Add an Approval and Procurement Record Page similar to
Figure 3B of reference (c)

573

CVA63 200/858

2241104-58

ORIGINAL

SIC 123

COPIES DESTROYED IN 1963

SERVICE TO THE FLEET

252:PDM:b
CVA64/SL/8

b. General Data - Distiller Brine Overboard Pump

- (1) Pump Data - Complete items 9 and 10.
- (2) Motor Data -
 - (a) Item 11 - Insulation should be Class B.
 - (b) Item 12 - Enclosure should be total enclosure.
 - (c) Item 15 - Frame should be 404VY.
- (3) Control Data - Items 6 and 7 should be rechecked.
- (4) Weights -
 - (a) Motor should be 790
 - (b) Controller should be 27
 - (c) Total per one unit 2017
 - (d) Complete Item 5

c. Distiller Sea Water Heater Drain Pump

- (1) Pump Data - Complete Item 6
- (2) Motor Data - Item 14 should be 225 GZ
- (3) Control Data
 - (a) Item 3 should be 50° G
 - (b) Complete Items 5 and 6
- (4) Calculated Weights - Complete Items 2 to 6 incl.

d. Distiller Distillate Pump

- (1) Pump Data - Complete Items 5, 7, 8, 9, 10, 12, 13 and 14
- (2) Motor Rating
 - (a) Item 11 - Enter Class A

252:PDW:b
CVA64/81/8

- (b) Item 12 - should be NAVY A
- (c) Item 13 - should be continuous
- (d) Item 14 - frame number should be 225 GZ
- (e) Complete Item 15

(3) Control Data

- (a) Item 1, Service, should be A (Class HI-Shock)
- (b) Enclosure - dripproof
- (c) Ambient temperature - 50° C
- (d) Type - across-line
- (e) Complete Item 5
- (f) Insulation - Class A

(4) Weights - Complete Items 1 to 5

e. Add illustration of coupling assembly on List of Illustrations under Chapters I and II.

f. Page I-1, line 2, after two stage - add centrifugal

g. (1) Page I-2, under bearings, after positioned - add 2 bearings matched pair.

(2) Stuffing Box - add data on lantern ring and external connection.

h. (1) Page I-3

Piping; delete entire paragraph and substitute:

"The piping for both suction and discharge must fit perfectly and be supported independently of the pump. If piping is of incorrect length, it must be corrected. Do not force piping flanges into alignment with pump flanges, as this may force the pump out of alignment with the motor shaft and result in operating difficulties and repairs. Flanged openings are provided on the suction and discharge nozzles for gauge connections. A flanged opening from the first stage suction is provided as vent".

252:FDW:b
QVA64/si/s

(2) Packing - delete entire paragraph and substitute:

"The pump stuffing box is packed with four (4) rings of 1/2" square asbestos packing per MIL-P-17577. Symbol 1103 furnished in a square cotton case of required size and a lantern ring for lubrication with water off water connection. Do not use bulk packing....."

i. (1) Page I-4, paragraph b - include data on lantern ring installation.

(2) After paragraph c, add "CAUTION": Do not tighten the stuffing box gland to eliminate all leakage; otherwise gland may be made too tight and cause excessive binding of the motor shaft".

j. (1) Page I-5, line 5, after line add "valve".

(2) Paragraph B - Rotation, after the second sentence, add:

"At initial installation, or after an overhaul, check rotation to be certain it is rotating pump shaft as arrow indicates. This should be done by making momentary contact with the starter".

(3) Paragraph G5, line 2, making bearing plural, and change Navy Department Specification 14L30 to Military Specification MIL-G-18709.

k. (1) Page I-5, line 1, change (45) to (78).

(2) Add "to" after (Refer).

(3) After coupling size - specify quantity of oil for this coupling.

(4) After Normal Starting Procedure, add (Make sure Valve in discharge line is closed).

(5) Item 3 - should be "Start motor".

(6) Item 4 - should read "Open pump discharge valve when pump is up to pressure".

(7) Under Securing - Item 1 should be - "Close pump discharge valve".

(8) Item 2 should be "Stop motor".

252:PDM:b
CVA64/SL/s

(9) Underline last sentence of Item 3.

(10) Under Alignment, last line, the word clearance should be changed to "clearing".

J. Page I-7, last sentence - change (48) to (78).

M. Page I-10 - Disassembly and Reassembly

(1) After screw, change (48) to (78).

(2) After first sentence, add "Plug & Screw are for filling not draining".

(3) Substitute "type L" Class 3 bearing puller with type XII size 3, and "type R" Class 2' gear puller with type VII, size 2. Change specification JAN-P-690 to GGG-P-781.

N. Page I-11 delete paragraph C - Impellers and Sleeves and substitute:

"Unscrew impeller lock nut (18) and use a type VII Gear Puller size 1, with a type XVII male adapter, Class 1, size 7 to pull first stage impeller (82) off shaft (14A). Remove shaft sleeve (16) and second stage impeller (83) from shaft (14A) with a type VII Gear Puller, size 2 with legs 16-1/2" long using adapter XVII, Class 1, Style A, size 4 in accordance with GGG-P-781".

O. Table I - Parts, Item 4, change to read "Shaft Sleeve (16) and Gland (34)".

P. Figure I-2 should be Distiller Brine Overboard Pump (Motor Driven), Outline, Certification Data, Onboard Repair Parts & Tools, Contractor's drawing number CA5629 BUSHIPS drawing number CVA64-517-H-1360431.

Q. Figure I-5, Contractor's drawing number CA-8627 assigned BUSHIPS drawing number 3826191. Add coupling master drawing.

R. Figure I-6, Contractor's drawing number CA-8629 assigned BUSHIPS drawing number CVA64-517-H-1360431.

S. (1) Chapter II - Page II-3, paragraph B - Piping, change first sentence to read:

"The piping for both suction and discharge must fit perfectly and must be supported independently of the pump".

252:PDM:b
CVA54/51/8

(2) This sentence, add "with driving motor" after the word "alignment".

t. Page II-

(1) Under Packing, delete MIL-P-17303 and substitute MIL-P-17577, Syal 1103.

(2) Add comments about lantern ring.

u. Page II-

(1) Item - change Navy Dept Leaflet 14L3 to MIL-G-18709.

(2) Item - specify amount for this coupling.

(3) After Normal Starting Procedure, add (Make Sure discharge valve is closed).

v. Page II-

(1) Item should be "Start motor".

(2) Item should read "Open pump discharge valve when pump comes up to pressure".

(3) Securing - Reverse Items 1 and 2.

w. Page II- last paragraph, specify amount required.

x. Page II-, Disassembly & Reassembly - if (66) and (69) are for filling, how can they drain?

y. Table II Item 5, after Mechanical Flinger, change (29) to (71). Is radial clearance 0.015 correct?

z. Figure I-4, add coupling assembly.

4. Include the test validated diagrams, performance curves, certification data and electrical inserts.

5. The final manual shall strictly conform to the requirements of reference (c).

Copy to
Buffalo Pumps, Inc.

J. L. Gifford

J. L. GIFFORD
By direction

2 1164-58

6

1

PORTSMOUTH NAVAL SHIPYARD

PORTSMOUTH, N. H.

IN REPLY REFER TO

245P
N102-58884(X)
(7/1)

JUN 8 1959

From: Commander, Portsmouth Naval Shipyard
To: Chief, Bureau of Ships

Subj: SS(N)593 Class Submarines, Technical Manual for Low Pressure Brine Pump for 8000 GPD Distillation Unit; forwarding preliminary copies for approval and assignment of NAVSHIPS number

Ref: (a) PTSMH NAVSHIPYD Contract N102-58884(X) with Warren Pumps Inc Warren Mass
(b) Detail Specs for Building Submarine SS(N)593
(c) Military Spec MIL-M-15071C (Ships) of 10 Sep 1957

Encl: (1) Preliminary copy of Technical Manual, Low Pressure Brine Pump for 8000 GPD Distillation Unit, PTSMH No. B-9884 (2 copies)

1. Subject preliminary technical manual has been prepared under reference (a). As required by references (b) and (c), copies are forwarded for Bureau approval and assignment of a NAVSHIPS identification number. Approval is recommended subject to the following comments:

a. Cover and Title Page: After "Low Pressure Brine Pump", add "for 8000 GPD distillation unit."

b. Approval and Procurement Record Page: the approved style of APR page as outlined in reference (c) shall be used in the final manuals.

c. Table of Contents: Add ahead of listing "Part I Low Pressure Brine Pump", below listing of Part I add "Part II Electrical Motor."

d. Page 1:

(1) Line 1; after "description" add word "installation".

(2) Line 2; type "1 1/2-CVOC-5" is proper designation.

b 26

SS(N)593 = class / 547

USS Haddock
821

245P
N102-58884(X)
(7/1)

(3) Line 3; after "suction," change to read "semi-open impeller, close-coupled type."

(4) CAUTION note (bottom of page); second sentence should read "It is not to be dropped or jarred and should always be transported with the pump unit supported on resilient mounts or, if rigidly supported on the distillation unit, the entire assembly should be supported on resilient mounts during shipping."

e. Page 3:

(1) Alignment; delete this paragraph.

(2) Check for Alignment; delete line 5 and substitute "aligned and balanced."

(3) Trouble Shooting Guide;

Low capacity - strike out causes "9, 10 and 29"
Low pressure developed - strike out cause "29"
Excessive power required - strike out cause "29"
Excessive leakage from stuffing box - strike out cause "22"

f. Pages 4 and 5: Lists of troubles; delete items 9, 10, 22, 29, 42, 44, 45 and 46.

g. Page 5: Mechanical Troubles; item 41 delete words "or failure of a hydraulic balancing device, causes excessive thrust." Comment: There is no hydraulic balancing device.

h. Page 5: Dismantling; paragraph 5, after "removing bolts (20) add ", loosening Piece (13),"

i. Page 6: Reassembling;

(1) Paragraph 5, after "washers (30)" should read "on studs (13) and (14)."

(2) Paragraph 8, should read "on studs (13) and (14)."

(3) Paragraph 10, delete ". . . bolt together with bolts." and substitute "and secure with screws (20)".

(4) Paragraph 11, delete "along with the resilient mounts."

6111062-59

245P
N102-68884(x)
(7/1)

2. To meet scheduled dates, Bureau approval is requested within three weeks. Final printed copies will be distributed in accordance with reference (b) approximately 120 days after receipt of Bureau approval. Twenty-five copies of the manual will be forwarded to Ships Parts Control Center, Mechanicsburg, Pa., for stock.

[Signature]
J. WOOLSTON
BY DIRECTION

Copy to:
BUSHIPS (Code 525)
MARE NAVSHIPYD (w/2 copies encl (1))

6111062-59

2

USS Haddock
023

PORTSMOUTH NAVAL SHIPYARD

PORTSMOUTH, N. H.

IN REPLY REFER TO

245P

N102-68648(X)

(7/1)

JUN 8 1969

From: Commander, Portsmouth Naval Shipyard
To: Chief, Bureau of Ships

Subj: SS(N)593 Class Submarines; Technical Manual for Type
31K De Laval - IMO Pump, forwarding preliminary
copies for approval and assignment of NAVSHIPS No.

Ref: (a) PTSMH NAVSHIPYD Contract N102-68648(X) with
De Laval Steam Turbine Co Trenton N J
(b) Detail Specs for Building Submarine SS(N)593
(c) Military Spec MIL-M-15071C (Ships) of 10 Sep 1957

Encl: (1) Preliminary Copy of Technical Manual Type 31K
De Laval - IMO Pump, PTSMH No. B-9901 (2 copies)

1. Subject preliminary technical manual has been prepared
under reference (a). As required by references (b) and (c),
copies are forwarded for Bureau approval and assignment of a
NAVSHIPS identification number. Approval is recommended
subject to the following comments:

a. Complete approval and procurement record page.

b. Pages 1-1; 1-1-1 Introduction - Second paragraph
should begin: "Each unit consists of a pump and motor,
flexibly coupled, complete with mounting brackets. All
pumps are identical. Motor drives are 100 HP or 50 HP.
Arrangement of the 50 HP units, etc."

2. To meet scheduled dates, Bureau approval is requested
within three weeks. Final printed copies will be distributed
in accordance with reference (b) approximately 120 days after
receipt of Bureau approval. Twenty-five copies of the manual
will be forwarded to Ships Parts Control Center, Mechanicsburg,
Pa., for stock.

626

0111240-59

SS(N)593 Class/547

Copy to:
BUSHIPS (Code 525)
MARE NAVSHIPYD (w/2 copies encl (1))

J. WOOLSTON
BY DIRECTION

USS Haddock
834

PORTSMOUTH NAVAL SHIPYARD

SS(N)593 OL/247(649P)
Ser 6457-1622

From: Chief, Bureau of Ships
To: Commander, Portsmouth Naval Shipyard
Portsmouth, New Hampshire

29 JUN 1959

Subj: Contract N102-68884(X) - SS(N)593, Low Pressure
Brine Pump for 8000 GPM Distillation Unit - Pre-
liminary Manual for Approval

Ref: (a) NAVSHIPYB PTSMH ltr 245P N102-68884(X)(7/1)
of 8 June 1959
(b) Warren Pumps, Incorporated, technical manual,
Low Pressure Brine Pumps - NAVSHIPS 347-3378

1. Preliminary technical manual, reference (b), was for-
warded to the Bureau for approval and assignment of NAVSHIPS
number by reference (a).

2. Reference (b) has been assigned the NAVSHIPS number ap-
pearing above and is approved subject to conformance with
the comments contained in reference (a) and additional com-
ments as follows:

a. On page 1 of the text, under paragraph headed
"General Data", delete the present paragraph in its entirety
and insert "the complete pump and motor characteristics, the
Table of Weights, clearances, List of Reference Drawings, List
of Onboard Repair Parts, and any other pertinent data". This
data should be listed in tabular form as required by paragraph
3.3.1.2.1 of Specification "MIL-M-15071C".

3. All drawings and illustrations contained in the text shall
be total reproductions of final approved and validated drawings.

4. This letter in no way authorizes any increase in the cost
of the subject equipment being procured under the subject con-
tract, or approval of any changes in commitments or delivery
schedule.

Copy to:
525
1500L Attn: Mr. Kooyman
626B4

WILLIAM A. BUDDING, JR.
By direction

Prepared by A. Napoletano, Ext. 62217
Typed by Marilyn Janda, 6-24-59
6111062

USS Haddock
025

7-12(M)22321/247(62634)
Ser 6263-1303

From: Chief, Bureau of Ships
To: Commander, Portsmouth Naval Shipyard

Subj: TURBINE (88093) class, IMC hydraulic pump, type JIK 156;
approval of technical manual for

13 JUL 1959

Ref: (a) PERSM Nr 2457, N102-68648(x) (7/1) of 8 June 1959

1. DRAWING number 347-3377 is assigned to the technical manual forwarded by reference (a) for subject equipment manufactured by the Naval Steam Turbine Company.

2. The subject manual is hereby approved by the Bureau subject to the following comments, in addition to the Shipyard comments:

- a. Sample Cover, delete title "Type JIK No. 156-IMC Pump" substitute "IMC PUMP for MAIN and VITAL HYDRAULIC SYSTEMS"
- b. Sample approval page, delete title, "Type JIK No. 156-IMC PUMP" substitute "IMC PUMP for MAIN and VITAL HYDRAULIC SYSTEMS"
- c. Page 1-1, Section 1-1-1 Introduction, after first paragraph, add a note "The terms fluid and oil are used synonymously and both refer to the power transmission liquid in the hydraulic system"
- d. Page 1-1, Section 1-1-2, (1) Fluid Operating Temperature Range, °F, delete "70-120" substitute "70-160" (2) Fluid Viscosity Range, cSt, delete "270-3800" substitute "120-1600"
- e. Page 1-2 Section 2 Unit Drawings also Page 1-1/3, Page 1-5/6, The title of the drawings, "Outline, Certification Data, List of On-Board Repair Parts, Tools and Characteristic Curves" does not reflect content of the drawings since the list of on-board repair parts, tools and characteristic curves are not shown. Either the title of the drawings should be revised or the missing data filled in.
- f. Page 5-1, Section 5-1-1 General, line 2, "oil soluble" rust preventative is not applicable since the system is designed to use phosphate ester hydraulic fluid.

Copy to:
COMMUNICATED MARS
SUPERVISOR MARCAGLIA

W. A. WILCOX
Director

632
327
Prepared by F.R. Macintosh Ext. 65459
Forwarded by M. Macintosh Ext. 65459

USS Haddock
033

PORTSMOUTH NAVAL SHIPYARD
PORTSMOUTH, N. H.

245W
N102-68605(X)
(8/26)

100 -7 1958

From: Commander, Portsmouth Naval Shipyard
To: Nash Engineering Co., South Norwalk, Conn.

Subj: SS(N)591 Class Submarines; Technical Manual for Hytor
Vacuum Priming Pump for Trim and Drain Pump, NAVSHIPS
347-3374, approval of

Ref: (a) Contract N102-68605(X) Item 3 Technical Manuals
(b) Nash Engineering Co ltr of 17 Dec 1958
(c) Military Spec MIL-M-15071G (Ships) of 10 Sep 1957

1. The subject technical manual, prepared under reference (a)
and submitted for approval by reference (b), is approved sub-
ject to the following comments:

a. Figure 1-1 should be of current design showing new
seal water tank of Nash drawing AA-626.

b. Include drawing AA-626, Seal Water Tank, with drawings.

c. Complete the Approval and Procurement Record Page.

d. Make corrections to drawings in accordance with
Portsmouth Naval Shipyard letter 134A N102-68605(X) of 13
December 1958 with exception noted in Portsmouth Naval Shipyard
speedletter of 18 December 1958.

e. Pages 1-4, 1st paragraph, 12th sentence - "orifice
bushing (26)" should be "orifice bushing (16)". Also 13th
sentence "(16)" instead "(26)". 17th sentence - "fitting (30)"
should be "elbow (31)" and "pipe (21)" should be "pipe (22)".

f. Pages 1-6, 3rd paragraph, 6th line - after "vacuum"
insert "during operation". 3rd paragraph, 7th line - after
"packing" insert "while primer is not operating". 4th para-
graph, last line delete phrase in parentheses (Details under
Repairs, etc.). Subtitle beginning with "Primer" - after word
"Volume" add "of Air".

523
SS(N)591 class/347 8101116-59

USS Haddock
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245p
 M102-68603(X)
 (8/26)

g. Pages 1-7 part (b), 2nd line replace semicolon after "pushing" with comma. 3rd line after "centrifugal" add "pump". Part C - delete "comma" and the words "not open".

h. Pages 1-7, Title line "Water Out Air Discharge" - add "Pipe". Next paragraph, 1st line, delete "over", insert "out with air".

i. Pages 1-7, Title line "Repairs" reword directions to "Refer to Figures 1-6 and 1-7 for List of On Board Repair Parts."

j. Pages 1-7, Title line "Disassembling" add "Pump Only". 6th paragraph line 3 - delete words "two of" and put semicolon after (2) line 6. Delete words "The remaining two" and insert words "and the tapered". Line 7 - delete words "are tapered and" and insert "which".

k. Pages 1-8, 1st line (a) - after "studs" delete "(22)" and insert "(21)". Subsection (g), line 1 - after word "studs" change "(21)" to "(22)". Subsection (g), line 6 - change word "Point" to "Paragraph".

l. Pages 1-10, 2nd paragraph line 1 - after "come" insert "(2)". Subsect (b), line 1 - after "studs" change "21" to "22". Add subsect "(g) Tighten all nuts evenly."

m. Pages 1-13, 4th paragraph - after word "drilling" add "If there is no rubbing, tighten nuts (26) on studs (21) evenly and then drill for dowels."

n. Page iv Table of Contents and List of Illustrations, delete Chapter II - Electrical Motor; also, delete Chapter I headings. Motor Information shall not be bound into the manual. Instead, staple each motor insert in its upper left corner and slip the unbound inserts packaged with the pump manuals.

2. Provision of reference (c) requires that final manuals be delivered to this Shipyard within ninety days of receipt of this approval. Information is requested as to the anticipated shipping date.

8101116-59

245P
N102-68605(X)
(8/26)

3. You are requested to comply with the requirements of paragraph 3.4.4.9 of reference (c) and forward a reproducible copy of subject manual directly to Naval Supply Depot, Mechanicsburg, Pennsylvania. Please make reference to the Contract and NAVSHIPS numbers when forwarding reproducible copy of the manual. Also, please forward copy of transmittal to Portsmouth Naval Shipyard, Portsmouth, New Hampshire, attention Code 245P.

4. This letter in no way authorizes any changes in the conditions, funds, or extension of delivery times beyond those stated in the contract. If the contractor believes a change is necessary or that additional time or funds are required because of the above authorization or approval, he must so state immediately in reply to this letter and receive authorization from the Contracting Officer before proceeding.

J. WOOLSTON
BY DIRECTION

Copy to:
BUSHIPS (525)(3)
INSMAT Bridgeport (2)
SPCC MECH

8101116-59

PORTSMOUTH NAVAL SHIPYARD

PORTSMOUTH, N. H.

IN REPLY REFER TO

EIS

245P
N102-68643 (X)
(9/3)

AUG 13 1959

From: Commander, Portsmouth Naval Shipyard
To: Chief, Bureau of ShipsSubj: SS(N)593 Class Submarines; Technical Manual for Low
Pressure Brine Pump for 2000 GPD Still, forwarding
preliminary copies for comment and assignment of
NAVSHIPS numberRef: (a) PTSMH NAVSHIPYD Contract N102-68643(X) with
- - Warren Pumps Inc Warren Mass
(b) Detail Specs for Building Submarine SS(N)593
(c) Military Spec MIL-M-15071c (Ships) of 10-Sep 1957Encl: (1) Preliminary copy of Technical Manual, Low Pressure
- - Brine Pump for 2000 GPD Still, PTSMH No. B-9885
(2 copies)

1. Subject preliminary technical manual has been prepared under reference (a). As required by references (b) and (c), copies are forwarded for Bureau comment and assignment of a NAVSHIPS identification number. Approval will be granted subject to the following comments:

a. Approval and Procurement Record Page - The approved style of APR page shall be used in the final manual.

b. Page 1, Introduction: Line 1 after "operation" add "installation"; line 2, substitute "3/4-CVOC-4" for "1 1/4-CVOC-5"; line 3, substitute "semi-open" for "open".

c. Page 1, Detailed Description: Paragraph 3, line 4, substitute "drilled" for "tapped"; "Caution" Note, last sentence should read - "It is not to be dropped or jarred and should always be supported on the resilient mounts."

d. Page 3 Alignment: Delete this paragraph.

e. Page 3, Check for Alignment: Delete last line in paragraph and substitute "aligned and balanced."

624
95(N)593 class/547USS Haddock
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245P
N102-68643(X)
(9/3)

- f. Page 4: Delete "Troubles No. 9, 10, 22, 29."
- g. Page 5: Delete Trouble No. 41.
- h. Page 5 Dismantling: Paragraph 5, substitute "screws (20)" for "bolts (20)".
- i. Page 6 Reassembling: Paragraph 8 add "and (14)"; paragraph 10 delete "and bolt together with bolts (20)".
2. To meet scheduled dates, Bureau approval is requested within three weeks. Final printed copies will be distributed in accordance with reference (b) approximately 120 days after receipt of Bureau approval. Twenty-five copies of the manual will be forwarded to Ships Parts Control Center, Mechanicsburg for stock.


J. WOOLSTON
BY, DIRECTION

Copy to:
BUSHIPS. (Code 525) (3)
MARE-NAVSHIPYD (2-copies encl (1))

8200727-59

IS(N)59301/447(6497)
Ser 6497-2436

From: Chief, Bureau of Ships
To: Portsmouth Naval Shipyard
Portsmouth, New Hampshire

17 SEP 1959

Subj: Contract M102-68643(X) with Warren Pumps, Incorporated,
25(N)59301/447(6497) - 2000 GPM Distilling Unit
Low Pressure Brine Pump - Preliminary Technical Manual
for Approval

Ref: (a) NAVSHIPD Portsmouth Ltr 245P, M102-68643(X),
(9/3) of 13 August 1959
(b) Warren Pumps, Incorporated Preliminary Technical
Manual - 2000 GPM Distilling Unit L. P. Brine
Pump - NAVSHIPD 347-3456

1. Preliminary technical manual, reference (b), was for-
warded to the Bureau of Ships for approval and assignment
of a NAVSHIPD number by reference (a).

2. Reference (b) has been assigned the NAVSHIPD number ap-
pearing above and is approved subject to conformance with
the comments contained in reference (a) and additional com-
ments as follows:

a. On page 1 of the text, under paragraph headed
"General Data", delete the present paragraph in its entirety
and insert the complete pump and motor characteristics, the
Table of Weights, Clearances, List of Reference Drawings,
List of Onboard Repair Parts and other pertinent data. This
data shall be listed in tabular form as required by paragraph
3.3.1.2.1 of Specification, MIL-P-15071C.

3. All drawings and illustrations contained in the text
shall be total reproductions of final approved and validated
drawings.

4. This letter in no way authorizes any increase in the cost
of the subject equipment being procured under the subject
contract, or approval of any changes in commitments or de-
livery schedule.

Copy to:
622B
626B4
325
622.3

Prepared by A. Napoletano, Ext. 62217
Typed by Marilyn Janda, 9-17-59
8200727-59

L. C. PETEDOFF

USS Haddock
024

PORTSMOUTH NAVAL SHIPYARD

PORTSMOUTH, N. H.

DAW

IN REPLY REFER TO

2452
N102-68895
(10/8)

SEP 21 1959

From: Commander, Portsmouth Naval Shipyard
To: Chief, Bureau of ShipsSubj: SS(N)593 Class submarines; technical manuals for air conditioning
sea water pump (lithium bromide plant), forwarding preliminary
copies for comment and assignment of NAVSHIPS numberRef: (a) PTSMH NAVSHIPYD Contract N102-68895 with Worthington Corporation
Harrison N J
(b) Detail Specs for Building Submarine SS(N)593 Section S1-5C
(c) Military Specs MIL-M-15071C (SHIPS) of 10 Sep 1957Encl: (1) Preliminary copy of Technical Manual, Air Conditioning Sea
Water Pump (Lithium Bromide Plant), PTSMH No. B-9920--2 copies1. Subject preliminary technical manual has been prepared under reference
(a). As required under references (b) and (c), copies are forwarded for
Bureau comment and assignment of a NAVSHIPS identification number.
Approval is to be granted subject to the following comments:

- (a) Cover - Add information shown on Figure 1 of reference (c).
- (b) Title page - Add information as shown on Figure 2 of reference (c).
- (c) Section 1, page 1-1-1, paragraph 1-1-4 - Fill in weights for pump
spare parts and motor spare parts.
- (d) Section 1, page 1-1-2, paragraph 1-1-5, line 3 - After "and shaft",
add "sleeve."
- (e) Section 1, page 1-1-2, paragraph 1-1-7 - Add motor serial numbers
when available.
- (f) Section 2, page 2-12, paragraph 2-4-(7)-(7) - Add "Jacking screws
are provided."

2. To meet scheduled dates, Bureau approval is requested within three
weeks. Final printed copies will be distributed in accordance with ref-
erence (b) approximately 120 days after receipt of Bureau approval.
Twenty-five (25) copies of the manual will be forwarded to Ships Parts
Control Center, Mechanicsburg, Penna, for stock.

Copy to:
BUSNIPS (Code 525)

9240341-59

J. WOOLSTON
BY DIRECTIONUSS Haddock
200

PORTSMOUTH NAVAL SHIPYARD

PORTSMOUTH, N. H.

IN REPLY REFER TO

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245P

N102-68467(10/16)

SEP 23 1959

From: Commander, Portsmouth Naval Shipyard
To: Chief, Bureau of Ships

Subj: SS(N)593 Class Submarines; Technical Manual for
Auxiliary Sea Water Service Pump, forwarding
preliminary copies for comment and assignment
of NAVSHIPS No.

Ref: (a) PTSMH NAVSHIPYD Contract N102-68467 with
Ingersoll-Rand Co New York 4 N Y
(b) Detail Specs for Building Submarine SS(N)593
Section S1-5-C
(c) Military Spec MIL-M-15071C (Ships) of 10 Sep 1957

Encl: (1) Preliminary copy of Technical Manual, Auxiliary Sea
Water Service Pump, PTSMH No. B-9896 -- 2 copies

1. Subject preliminary technical manual has been prepared
under reference (a). As required under references (b) and
(c), copies are forwarded for Bureau comment and assignment
of a NAVSHIPS identification number. Approval will be
granted subject to the following comments:

a. Furnish an Approval and Procurement Record page com-
pletely filled out in accordance with reference (c).

b. Page 1-1-1, under General Data:

Temperature = after "30-85" add "degrees F"
Total Head = delete "H₂O" substitute "water"
Pump = before "SEA" add "Type"

c. Page 1-1-2, Paragraph 4; line 1, after "pump" insert
"impeller (3)"; lines 1 and 2, delete "of the single suction
enclosed type"; line 2, delete "on" and substitute "one";
paragraph 5, line 2, delete "sleeve (8)" and substitute
"sleeves; (8A) and (8B)"; paragraph 8, line 1 delete "flange
on" and substitute "face of"; paragraph 8, line 7, after "gland"
add "(17A)"; paragraph 8, line 9, after "sleeve" delete "(8)"
and substitute "(8A)" paragraph 8, line 13, after "bearing"
add "(241)" paragraph 8, line 14, after "lockwashers" delete
"(241A)" and substitute "(241B)".

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SS(N)593 Class/547

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245P
N102-68467(10/16)

d. Page 1-3-1, Section 1-3-2, line 1, after "units," add "for the first time."

e. Page 1-4-1, second paragraph; line 2, delete "continuously" and substitute "frequently"; line 3, delete "operations" and substitute "operation"; under Section 1-4-2, step 1, the term "smothering gland connection" is not clearly understood, believe "gland bleed off" or "cooling water connection" is intended; step 2, delete. "(See Chapter 2)."

f. Page 1-4-2, Section 1-4-2, Step 12; line 2, delete "(246B)" and substitute "(241D)".

g. Page 1-4-3, Step 7; line 4, delete "(246B); and substitute "(241D)".

h. Page 1-4-4, Step 19; clarify term "smothering".

2. To meet scheduled dates, Bureau approval is requested within three weeks. Final printed copies will be distributed in accordance with reference (b) approximately 120 days after receipt of Bureau approval. Twenty-five copies of the manual will be forwarded to Ships Parts Control Center, Mechanicsburg for stock.

[Signature]
BY WOLSTON
BY DIRECTION

Copy to:
BUSHIPS (Code 525)
NAE.NAVSHIPYD (w/2 copies encl (1))

9280518-59

2

ENCLOSURES RECEIVED IN 233

USS Haddock
013

AS(X)507/217(6497)
Ser 6497-6682

13 OCT 1959

From: Chief, Bureau of Ships
To: Commander
Portsmouth Naval Shipyard
Portsmouth, New Hampshire

Subj: Contract N102-66895 with the Worthington Corporation,
35103 Street, Bannockburn, Ill. concerning New Water
Pump (Lithium Bromide Plant), Preliminary Technical
Manual for Approval and Assignment of NAVSHIP Number

Ref: (a) NAVSHIP, Portsmouth Lit 215P, N102-66895,
(10/8) of 21 September 1959
(b) Worthington Corp. Preliminary Technical Manual-
Air Condensing New Water Pump (Lithium Bromide
Plant)-NAVSHIP 347-3476

1. Preliminary technical manual, reference (b), was for-
warded to the Bureau for comment and assignment of a NAVSHIP
number by reference (a).

2. Reference (b) has been assigned the NAVSHIP number ap-
pearing above and approval is recommended for the subject
application upon compliance with the comments contained in
reference (a) and additional comments as follows:

a. On page 1-1-1, under column headed "General Data",
add the "List of Applicable Drawings".
b. All drawings and illustrations contained in the
text shall be total reproductions of final approved and val-
dated drawings.

3. This letter in no way authorizes any increase in the cost
of the subject equipment being procured under the subject
contract, or approval of any changes in commitments or delivery
schedule.

Copy to:
626B4
622B1
622B3
525
1500L (Kooyman)

WILLIAM A. BUDDING, JR.
By direction

USS Haddock
028

RECEIVED THE NATIONAL ARCHIVES

DDG2-3/S1/8,Sl7(2-4411-K)

2-2-60-1549
January 28, 1960

From: Bath Iron Works Corporation
By Gibbs & Cox, Inc.
21 West Street
New York 6, N. Y.

To: Supervisor of Shipbuilding, U.S.Navy
139 Centre Street
New York 13, N. Y.

Subject: DDG2-3, 10-11 - Preliminary Technical Manual for
Turbine Driven Main Feed Pumps, NAVSHIPS
Sl7-3309; Worthington Corporation;
Purchase Orders DDG2/DDG10/G&C-215 -
Review of

References:

- (a) Military Specification for Technical Manuals,
MIL-M-15071C (Ships) dated 10 September 1957
- (b) Military Specification for Technical Manuals,
MIL-T-15071B (Ships) dated 16 August 1954
- (c) Letter from Bureau of Ships, DDG2 Cl/Sl7(626B4)
Serial 626B-2436 to SupShip, New York, dated
March 9, 1959; forwarded by letter from SupShip, N.Y.,
DDG2 Cl/9470/9020/8, Serial 4802-272 to
Gibbs & Cox, Inc. dated March 11, 1959
(3-12-59-67)
- (d) Letter from Bath Iron Works Corp. (G&C),
DDG2-3/S28/3(2-4405-K) to Worthington Corp.,
(cc: SupShip, N.Y.) dated January 25, 1960
(1-25-60-1603)

Enclosure: Two (2) Copies of

- (A) DDG2-3, 10-11 Preliminary Technical Manual for
Turbine Driven Main Feed Pump, NAVSHIPS Sl7-3309

1. Enclosure (A), forwarded without a letter of transmittal,
has been reviewed. It is considered satisfactory subject to approval by
the Navy Department and to the comments listed in Paragraph 3 herein.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

REPRODUCED AT THE NATIONAL ARCHIVES

DDG2-3/S1/8,Sk7(2-4411-X)

- 2 -

2. The format of Enclosure (A) generally adheres to the requirements of a Type III manual per Reference (a), rather than a Type C manual per applicable specification, Reference (b). This is acceptable to the Design Agent and it is assumed that it will be acceptable to the Navy Department. Upon receipt of Navy Department approval, the subject Purchase Order (for the DDG2-3) will be modified to specify manuals and quantities in accord with Reference (a). NAVSHIPS number for Enclosure (A) was previously assigned by Reference (c).

3. Technical Comments

(a) Final covers are to comply with Paragraphs 3.4.4.5, 3.4.4.6, 3.4.4.6.1 and Figure 1 of Reference (a). Title pages are to comply with Figure 2 and Paragraph 3.1.5 of Reference (a).

(b) Final manuals are to comply with Paragraph 3.4.4 of Reference (a) relative to production and reproduction of Type III manuals. Paragraph 3.4.4.9 applies relative to the furnishing of a reproduction copy of the final manual.

(c) Approval and Procurement Record Page

Change the quantity of manuals to correspond with that to be specified in the modified Purchase Order for DDG2-3. The Vendor will complete the page and re-submit it for approval prior to final printing.

(d) Page iii, Table of Contents

The outline for Chapter 1 should be in the following general order:

Chapter 1 - General Information

Section 1 - Contract Data and Serial Numbers
 Section 2 - Performance Data
 Section 3 - Weights
 Section 4 - Clearances
 Section 5 - Introduction

Present headings and text within the manual should be revised (or rearranged) per above. (Paragraph 3.4.1.2 of Reference (a) applies)

REPRODUCED AT THE NATIONAL ARCHIVES

DDO2-3/S1/8,Sh7(2-4411-K)

- 3 -

3. (Continued)

(e) Pages iii and v, Table of Contents

In Section 1 for Chapters 2 and 3, change headings to read "Section, Detailed Description". This also applies to the text proper and page headings. (Paragraph 3.4.1.2.3 of Reference (a) applies).

(f) Page ix, Table of Contents

In Section 4, Trouble Shooting Guide, briefly identify by titles "Trouble Nos. 1, 2 and 3". Same applies to the four similar items on page x.

(g) Page xi, Table of Contents

Section 3 of Chapter 6 should be deleted since it presently consists of a single sheet referencing another part of the text which already covers the item.

(h) Page xii, Table of Contents

Delete entry "Chapter 9, List of Illustrations etc." since the listing on the following page is self-explanatory and all of the figures and drawings will be contained in one group. Relative to the listing on pages xiii to xv, delete prefix "Section" and "number" for Pump, Turbine, etc. Change major heading to "List of Figures and Drawings (Back of Manual)".

(i) Page Headings

Relative to text page headings, Paragraph 3.4.2.3 of Reference (a) applies. Briefly, the present heading at the top of each left hand text page should remain as is, but the heading at the top of right hand pages should only contain the chapter number and title of the chapter (in brief where necessary).

REPRODUCED AT THE NATIONAL ARCHIVES

DDG2-3/S1/8, S17(2-4411-X)

- 4 -

3. (Continued)

(j) Page Numbering

Present page numbering does not fully comply with Paragraph 3.4.2.5 of Reference (a). Figure 6 of Reference (a) specifies the manner of page numbering a manual employing chapters and sections.

(k) Page 1-2-3, Section 2, Description

- (1) Change heading to "Section 5, Introduction" per Paragraph 3 (d) of this review.
- (2) Change the first paragraph in part as follows: "This technical manual,..... pumps aboard these ships," (Ship numbers and quantity of pumps per ship should be deleted in the interest of utilizing the manual on future contracts.)

(l) Page 1-3-4, Performance Data

Insert "Feedwater Discharge Temperature (Maximum Anticipated) °F266 - 266 - 266" under "Suction Temp. deg. F0.945"

(m) Page 1-3-7, Performance Data

In the second and tenth lines, change "75-100" to "80-105" to agree with the air piping installation aboard ship.

(n) Page 1-3-8, Performance Data

In the sixth line, change "Voltage Protection" to "Voltage Release".

(o) Page 2-3-6, Adjustment and Tests

In the third paragraph of Section 2-3-1, second and fourth lines, identify "leveling bolts" and "shims" by piece and figure numbers.

RECEIVED
NAVY DEPARTMENT ARCHIVES

DDG2-3/S1/8,SL7(2-4411-K)

- 5 -

3. (Continued)

(p) Page 2-3-7, Disassembly Procedure

In Steps 7c and 7d, insert missing page numbers.

(q) Pages 2-4-8 and 2-4-9, Disassembly at Rotor (Inboard and Outboard Ends)

(1) In Step 9 (Inboard End) and Step 8 (Outboard End), "piece (229)" is not shown on Figure 9-1-16. Reconcile.

(2) In Step 15 (Outboard End), insert missing page number.

(r) Page 2-4-9, Assembly Procedure

It is doubtful that Paragraph 2-4-6 will be acceptable to the Navy Department. Previous instructions from the Navy Department required a detailed reassembly procedure for rather complex equipment. In this instance, it is not considered practical to have repair personnel attempt to follow the disassembly procedure in reverse order to properly reassemble the unit. It would appear that the reassembly of the unit would be rather critical and would require skill in establishing the proper clearances (shown on Page 1-4-11) during and after reassembly. It is not believed that a successful reassembly procedure can be followed by merely reversing the present disassembly procedure.

Navy Department comment is requested on this subject.

(Note: - Detailed assembly procedures within the turbine portion of the manual are satisfactory.)

(s) Page 2-4-12, Placing Rotor in True Lateral Position

In the last line, change "(14.1)" and "(24)" to "(10)" and "(25)"; also identify "(229) or (222)".

(t) Page 2-4-12, Installing Upper Casing Half

In the second paragraph, the numerical order for tightening holding down nuts is not indicated on Figure 9-1-12.

REPRODUCED AT THE NATIONAL ARCHIVES

DDG2-3/S1/8,547(2-4411-K)

- 6 -

3. (Continued)

(u) Page 2-4-13, Quarterly

Add - "4. Drain oil from sump, clean the sump and refill with new oil."

(v) Page 2-4-14, Annually

Delete the first test as it is not applicable.

(w) Pages 2-4-14 and 2-4-15, Trouble Shooting Guide

Revise Paragraphs 2-4-21, 2-4-23 and 2-4-24 to reflect the actual installation (no suction strainers or feed heater tanks are installed). Use Article 47-135 of the Bureau of Ships Technical Manual as a guide.

(x) Page 3-1-4, Casing Lower Half (Group 2)

In the first paragraph, second line, reconcile .059-.067" with that shown on Page 1-5-12.

(y) Page 3-1-8, Pressure Piping (Group 21)

In the second line, change Paragraph "1-10" to "3-1-11"

(z) Page 3-1-9, Drain Piping (Group 22)

In the third line, insert Fig. 9-2-7 after "(6.1)".

(aa) Page 3-1-11, Low Pump Suction Pressure Safety Trip

In the first paragraph include the various sequential settings for the pumps. (1A, 2A-44 PSIG, 1B, 2B-47 PSIG, 1C, 2C-50 PSIG) or specify that the settings are contained on a label plate installed aboard ship.

(bb) Pages 3-1-11 and 3-1-12, Combined Exhaust and Relief Valve

The text should be revised to agree with Figures 9-2-35. The present text is based on Drawing S-252 instead of Drawing S-539.

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DDG2-3/S1/8, S17(2-4411-K)

- 7 -

3. (Continued)

(cc) Page 3-2-13, Rotor Float

In the last line add "Fig. 9-2-7" after
"5.10) (5.11)"

(dd) Page 3-4-14, Casing, Bearings and Rotor

Revise Step 6 to indicate that coupling halves
are separated before further disassembly is
carried out.

(ee) Page 3-4-17, Casing, Bearings and Rotor (Assembly)

In Step 11, reconcile "keys (3.3)" with "locating
spacers(3.3)" shown on Figs. 9-2-7 and 9-2-12.

(ff) Page 3-4-21, Oil Cooler

Hazardous or toxic fluids are generally forbidden to
be used as solvents aboard ship. In lieu of gasoline
or carbon tetrachloride, the Navy Department is
requested to specify an approved solvent by Military
Specification or Standard Navy Stock Number.

(gg) Page 3-4-22, Motor Driven Oil Pump

- (1) - In title, change "Fig. 9-2-24" to "9-2-25"
- (2) - In the first step, insert Fig. 9-2-6 after "(20.4)",
- (3) - In the third step, include disassembly of the chain
coupling prior to removing the pump.

(hh) Page 3-4-23, Hand Oil Pump

In the first line, add "Fig. 9-2-6" after "(20.3)"

(ii) Page 3-4-23, Combined Exhaust and Relief Valve

Text should be revised to agree with applicable
drawing (S-539). Present text is based on
drawing S-252. This also applies to Paragraph
3-4-23 on Page 3-4-25. (See Paragraph 3 (bb)
of this review).

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DDG2-3/S1/8, Sh7(2-4411-K)

- 8 -

3. (Continued)

(jj) Page 3-4-27, Low Oil Pressure Alarm Contactor

Also add "Figure 9-2-33" to heading.

(kk) Page 4-1-4, Leslie Diaphragm Recirculation Control Valve

- (1) In the fifth line, substitute "DRNSL" for "DRF".
- (2) In the ninth line, delete "bronze" and insert "aluminum". Delete the last sentence.

(ll) Page 4-4-11, Trouble Shooting Guide

In Trouble No.1, "Check C", last line, reconcile the amount of downward movement with that shown on Fig.9-3-9.

(mm) Page 5-1-2, Hydraulic System Components

In the fourth Step, third line, delete "(44 PSIG for these vessels)". The minimum setting varies with each pump, i.e. 44, 47, 50 PSIG. (See Paragraph 3 (aa) of this review).

(nn) Page 5-1-3, Hydraulic System Components

- (1) Revise Step 7(a) to read - "Reserve cover (2) and prop (split spacer) (43)"
- (2) Revise Step 7(b) to read - "Push spring adjusting rod of the jackscrew assembly (4) down to engage screw driver slot"
- (3) In Step 7(c), delete "(1)" after "rod".

(oo) Page 5-4-9, Feedwater Header Pressure Set Point Controller

In Step 2(d-3), fourth line, correct spelling of "turns"

(pp) Page 5-4-10

After Step (d) include as separate items the component adjustment for the Auto-Manual Transfer Valve and the Manual Signal Generator. If no adjustment is required, so state.

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DDG2-3/S1/8, S47(2-4411-X)

- 9 -

3. (Continued)

(qq) Pages 6-1-1 and 6-1-3/4

Where "specification 14-1-3C" appears, it should be changed to "Military Specification MIL-G-18709"

(rr) Page 7-2-2, Preliminary Operation

Inasmuch as the valves mentioned in Steps 1-5 are normally open, the following revisions should be made:

- (1) Step 1, second and third lines - Delete "then close" and add "closed" after "transmitter".
- (2) Step 2 - Revise to read - "See that the air supply valve to the panel is open".
- (3) Step 3 - Revise to read - "See that all air valves in panel to control components are open".

(ss) Page 7-3-3, Differential Pressure Control System

- (1) Revise Step 7 to read - "See that all air valves in panel to control components are open".
- (2) Revise Step 9 to read - "See that all valves in water lines to panel, and water manifold valves at differential pressure transmitters are open and the center equalizing valve in manifold at transmitters closed".

(tt) Page 7-3-3, Feed Pump

- (1) In Step 11, third line, add "with the exception of the pump discharge valve" after "opened".
- (2) Delete Step 13 as these connections are blanked off.

(uu) Page 7-3-4, Turbine

- (1) Revise Step 16 to read - "Open drain valve in exhaustor system line. When line is drained, close drain valve and open line valve in exhaustor system".
- (2) Revise Step 17 to read - "See that the combined exhaust and relief valve is closed".

(vv) Page 7-4-5, Starting

Insert new Step 4 to read "Open the combined exhaust and relief valve". Revise present Step 4 to read "Shift the steam chest drain to the high pressure drain main, whenever steam becomes 'dry'. Remember steps". Add as a last step - "Open the pump discharge valve".

(vvr) Page 7-4-6, Starting When Another Feed Pump is Already Operating

Paragraph 3(vv-2) above applies.

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DDG2-3/S1/8, S47(2-4411-K)

-10-

3. (Continued)

(xx) Page 7-4-7, Para. 7-4-3

Following Step 6, include a brief procedure describing the steps to take to transfer to Manual Control (Para. 7-5-1), i.e., setting of transfer valve, auto-manual signal generator, opening the valve in the air line to the pneumatic hydraulic pressure controller, etc.

(yy) Page 7-5-8, Shifting From Automatic To Manual Control

Include a brief procedure (after 7-5-4) to cover the manner of transferring from manual operation to control of the unit without using the differential control panel.

(zz) Page 7-5-8, Cutting In A Second Boiler

Revise the first sentence to read - "Cutting in a second boiler while a pump or pumps supply a boiler under differential pressure control is accomplished by opening the stop valves in the feedwater line to the oncoming boiler and setting the feedwater control valve for automatic operation."

(aaa) Page 7-5-8, Observations During Operation

- (1) In Step 1(g), Change "65-125 PSIG" to "80-105 PSIG".
- (2) In Step 4, revise the statement to reflect the actual ship-board installation. Figure 9-1-3 indicates a steam inlet pressure gage only. In addition, a practical procedure for checking the speed should be included. (Tachometers are not normally furnished each fireroom to check the speed of the pumps every time more than one pump is in operation).

(bbb) Page 7-6-10, Securing

- (1) Add to Step 1. - "Close the pump discharge valve".
- (2) Revise Step 4 to read - "Shift the steam chest drains to the fresh water drain main. Close the valve in the gland leakoff line to the exhaustor and open the drain valve in the line."
- (3) Revise Step 7 to read - "Close the stuffing box gland cooling water, gland relief, low suction pressure trip actuating line and pump suction valves".

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DDG2-3/S1/8, S47(2-4411-X)

-11-

3. (Continued)

(ccc) Page 7-6-11, Section 7, Standby Status

The entire procedure should be carefully reviewed in conjunction with that outlined on Enclosure (A) to Reference (d) and Chapter 50, Article 50-3 of the Bureau of Ships Technical Manual. Of importance are the procedures governing idle turbine warm up, drainage, etc. Appropriate revisions are to be made to the present text.

(ddd) Page 8-0-1/2, Chapter 8 - Parts Lists

Paragraph 3.4.1.2.7 of Reference (a) requires a complete listing of repair parts (and special tools) to be included in a technical manual. Enclosure (A) does not have a complete parts list section, but does possess vendor drawings covering repair parts and special tools. In this regard, Navy Department comments are requested relative to the acceptability of the aforementioned drawings within the manual as fulfilling the requirements of paragraph 3.4.1.2.7, or whether separate sections listing repair parts and tools per paragraphs 3.4.1.2.7.1 and 3.4.1.2.7.2 of Reference (a) are required.

(eee) Page 9-3-3, Section 4 - Differential Pressure Control System

The following additional drawings should be added -

<u>Fig. No.</u>	<u>Title</u>	<u>Drawing No.</u>
9-4-10	Model 53N Transfer Valve	539557
9-4-11	Model 53N Relay Sender (Manual Signal Generator)	539067

(fff) Lubrication Chart

The lubrication requirements for the different components of the equipment are contained in brief, throughout the manual. In order to present a convenient summary of lubricants, it is requested that the vendor include a lubrication chart at the end of the operating instructions, page 7-7-12, similar to the following sample.

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DDG2-3/S1/8,SL7(2-4411-K)

-12-

3. (fff) (Continued)

LUBRICATION CHART

Name	Points Lubricated	Lubricant		Frequency	Drawing Reference
		Mil.Spec.	Quantity		
Main Coupling	2 Alemite Fittings	MIL-G-12345	8 Ozs.	Weekly	Fig. 2-8-6
Main Sump	Vis Fill Line	2190TEP, MIL-L-17331	65 Gals.	As Necessary	Fig. 4-9-2

(ggg) Foldover Illustrations

- (1) Pages 9-1-1 to 9-3-3 list the drawings to be included within the final manual. In this regard, the Navy Department has, in the past, requested that technical manuals contain reproductions of complete and approved plans rather than partial reproductions, etc. Therefore, the vendor is requested to include reproductions of complete plans (where possible) in lieu of partial reproductions or excerpts of plans. The drawings are to show the plan number, approval and revision block, etc. and are to comply with the requirements of paragraphs 3.4.2.5.1 and 3.4.2.6.1 of Reference (a).
- (2) Further to paragraph 3(h) of this review, the following statement should be inserted beneath the appropriate headings, i.e., Pump, Turbine, etc. -

"*Drawings marked with an asterisk do not contain a list of material. To identify the parts shown thereon, obtain the part index number, then refer to the List of Material Drawing, Figure _____ for part identification)." Vendor is to asterisk the appropriate drawings to the left of the titles in the listing.

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-13-

4. Upon receipt of Navy Department approval, the vendor will be requested to submit two copies of revised pages (either in manuscript form or in printer's proof form) for examination prior to final printing. The number of final manuals for stock purposes and the availability date of final manuals will be the subject of separate correspondence.

BATH IRON WORKS CORPORATION
BY GIBBS & COX, INC.
W. C. BACHMAN

H. T. Exxmeier
H. T. Exxmeier
By direction

TJL:twb/wsd

CC (2):
Worthington Corp.
Harrison, N.J.
Attn: Mr. W.E. Pinckney

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CLASSIFICATION & INBOARD 117K 0210/10

SUPERVISOR OF SHIPBUILDING, USN, AND
NAVAL INSPECTOR OF ORDNANCE
130 CENTRE STREET
NEW YORK 15, N. Y.

IN REPLY REFER TO:

DDG2CL/9470/9020/8
Ser 3932-273:js
10 MAR 1960

From: Supervisor of Shipbuilding, U.S. Navy, New York
To: Bath Iron Works Corp. (Gibbs & Cox, Inc.)
Chief, Bureau of Ships

Subj: DDG2-3, 10-11 - P O. DDG2/DDG2/DDG10/G&C-215; Worthington Corp.; Preliminary Technical Manual for Turbine Driven Main Feed Pumps; NAVSHIPS 347-3309; approval of

Ref: (a) BIWC(G&C, Inc) ltr DDG2-3/S1/8,S47(2-4411-K) of 28 Jan 1960
(b) BIWC(G&C, Inc) ltr DDG2-3/S1/8,S47(2-4489-K) of 2 Mar 1960
(c) DDG2-3,10-11 Preliminary Technical Manual for Turbine Driven Main Feed Pump, NAVSHIPS 347-3309
(d) BUSHIPS ltr DDG2CL/S47(626B4) Ser 626B-2436 of 9 Mar 1959

Encl: . To Bureau of Ships
(1) Two copies each of letters, references (a) and (b)
(2) Copy of preliminary technical manual reference (c)

To Bath Iron Works Corp (G&C, Inc)

1. Preliminary technical manual, reference (c), submitted for approval has been reviewed and is approved, subject to compliance with comments outlined in letters, references (a) and (b).

2. Comment of paragraph 3(r) of letter, reference (a), has been noted and it is requested that a detailed procedure be outlined in order to properly reassemble the unit.

3. In connection with paragraph 3(ddd) of letter, reference (a), the subject technical manual should include a separate parts list section, as required by paragraph 3.4.1.2.7. of Military Specification MIL-M-15071C.

4. The Supervisor's approval of the subject technical manual is applicable to purchase orders with this vendor for other ships of the same class where identical purchase specifications apply. Unless specifically requested, further approval of the manual is unnecessary by other shipyards.

141N

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DDG2CL/9470/9020/8
Ser 3932-273:js

To Bureau of Ships

5. In connection with paragraph 3(ff) of letter, reference (a), the Bureau's advice as to a suitable solvent is requested.
6. Enclosures (1) and (2) are forwarded in compliance with letter, reference (d).
7. The delivery date of final technical manuals, and quantities for stock purposes when known will be the subject of separate correspondence.

G. E. Carli
G. E. CARLI
By direction

Copy to:
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DEPARTMENT OF THE NAVY
BUREAU OF SHIPS
WASHINGTON 25, D. C.

IN REPLY REFER TO
DDG2C1/9470
Ser 649P-964
7 April 1960

From: Chief, Bureau of Ships
To: Supervisor of Shipbuilding, U. S. Navy, New York

Subj: DDG2-14 - Main Feed Pumps, Turbine Driven, Worthington Corporation, Manufacturer; Preliminary Technical Manual

Ref: (a) SUPSHIP NYK ltr DDG2C1/9470/9020/8, Ser 3932-273:js of 10 Mar 1960
(b) BIW Corp. (G&C, Inc.) ltr DDG2-3/S1/8, S47(2-4489-K) of 2 Mar 1960
(c) BIW Corp. (G&C, Inc.) ltr DDG2-3/S1/8, S47(2-4411-K) of 28 Jan 1960
(d) Preliminary Technical Manual, NAVSHIPS 347-3309, Turbine Driven Main Feed Pump
(e) BUSHIPS ltr DDG2C1/S47(626B4), Ser 626B-2436 of 9 Mar 1959

1. Reference (a) forwarded references (b), (c), and (d) in compliance with letter, reference (e), and requested Bureau comments in connection with paragraph 3(ff) of reference (c). Paragraph 3(ff) of reference (c) requests a Military Specification for an approved solvent that may be used in lieu of gasoline or carbon tetrachloride for cleaning and rinsing tube bundle of the oil cooler as specified in Section 3-14-16, paragraph 2(i) of reference (d).

2. Since toxic fluids should not be used as solvents aboard ship, it is recommended that the manual be revised to incorporate the use of cleaning agent, heavy duty degreasing compound conforming to Military Specification, MIL-C-20207, in lieu of gasoline and carbon tetrachloride. This compound is relatively non-toxic, however, it is alkaline and contact with the skin should be avoided. The revision of the manual should include a precautionary note such as use of goggles and rubber gloves while utilizing this cleaning agent.

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649Hm

N. W. Plotner
N. W. PLOTNER, By direction
Prepared by A. Leggieri, X62217
Typed by M. Janda, 4-5-60
3160088-60

REPRODUCED AT THE NATIONAL ARCHIVES



DEPARTMENT OF THE NAVY
BUREAU OF SHIPS
WASHINGTON 25, D. C.

IN REPLY REFER TO
8859301/9610
NObs 74547
Ser 641-1404
14 Sep 1960

From: Chief, Bureau of Ships
To: DeLaval Steam Turbine Company, 853 Nottingham Way, Trenton 2,
New Jersey
Via: Inspector of Naval Material, Philadelphia
Subj: 88(N)606, Contract NObs 74547; 2000 KW turbine generators,
Instruction Book
Ref: (a) DeLaval Steam Turbine CO, Trenton ltr Ser AS of 8 Jul 1960
(b) DeLaval Instruction 1351P, NAVSHIPS 361-1718, received in
the Bureau on 9 Aug 1960

1. The Bureau has the following comments to make on reference (b)
forwarded by reference (a), which has been assigned the above number:

a. Paragraph 1-1-1, change second paragraph to read as follows:

"The turbine was designed to operate normally on dry and saturated steam at any pressure from 285 psig to 750 psig exhausting to any pressure from 3 to 7 in. mercury (Hg) absolute. Both the turbine and generator are capable of carrying their rated load continuously. The turbine is also capable of operating full load at steam pressures as low as 285 psig when exhausting to a condenser pressure of 10 inches mercury absolute."

b. Paragraph 2-4-6, paragraph 1, last sentence, change to read as follows:

"The servomotor power piston (34) (Fig. 2-10-11) actuates the lever (56) to position the valves through a connecting linkage."

c. Paragraph 2-4-8, paragraph 1, line 7, change "governor body" to "spring seat".

d. Paragraph 2-4-10, paragraph 2, line 2, insert "(83)" between "valve" and "mounted".

e. Paragraph 2-5-3, insert ", steam seal regulator leakoff" between the words "leak-off" and "and" in third line of paragraph.

f. Paragraph 2-5-7, change third paragraph, first sentence to read as follows:

"Gland sealing steam, orificed high pressure steam, low pressure (turbine exhaust), sealing steam leak-off, and operating oil and oil drain connections are provided on the regulator."

9-14

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SSN593C1/9610

NObs 74547

Ser 641-1404

g. Paragraph 2-5-7, add the following sentence at the end of paragraph 4:

"Changing the tension on spring (57) will change the sealing steam pressure. (See Paragraph 2-8-26)."

h. Paragraph 2-5-11, first line, delete the word "direct" and add "and orificed".

i. Paragraph 2-6-1, after first paragraph add the following Caution paragraph:

"CAUTION - Sealing steam should not be admitted to glands of a stationary turbine. As it is impossible for a condenser which is common to a propulsion turbine and a turbo generator set to maintain vacuum without sealing steam being on both units the normal operating procedure is to place the propulsion turbine on the turning gear before turning on the sealing steam to either unit. See Propulsion Turbine Instruction Book (NAVSHIPS 341-). The turbo generator must be started turning within 10 minutes after the sealing steam is started."

j. Paragraph 2-6-2, insert the numeral (8) in third line of sub-paragraph 8 after the wording "A ratchet wrench (".

k. Paragraph 2-6-3, sub-paragraph 3, delete "step 7" in second line and add "step 8".

Sub-paragraph 5, delete "See Para. 2-8-8" in fourth line and add "See Para. 2-8-9".

Sub-paragraph 8, add sentence as follows:

"Drain valves must be open".

Sub-paragraph 9, add sentence as follows:

"Check sealing steam to propulsion turbines".

Sub-paragraph 10, add sentence as follows:

"(See Para. 2-8-26 for adjusting automatic regulation)".

Sub-paragraph 11, delete "Warning paragraph".

1. Paragraph 2-6-4, sub-paragraph 1, delete "Warning paragraph".

Sub-paragraph 2, Note paragraph, last sentence, change to read as follows:

"This valve cannot be opened without control oil pressure."

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 NObs 74547
 Ser 641-1404

Paragraph 2-6-4, sub-paragraph 3, change to read as follows:

"Make sure that the turbine hydraulic trip valve is latched. The valve is latched by pulling the handle away from the valve body or aft and holding it until it is held by oil pressure. Control oil pressure will not build up unless valve is latched."

Sub-paragraph 4, change to read as follows:

"Check the operation of the steam seal system."

Sub-paragraph 5, add the following sentence:

"The unit must be started turning within 10 minutes of turning on the sealing steam."

m. Paragraph 2-6-7-1, paragraph 1, fourth line, change "120" to "130". Change last sentence to read as follows:

"Under no condition should the return oil temperature exceed 180 F, nor should any bearing oil temperature rise exceed 50 F as indicated by the thermometers."

Add new paragraph to read as follows:

"The bearing temperature monitor alarm should be set at 250°F for bearings. Monitor readings will be different than the thermometer readings and should be checked against previous readings for an indication of trouble."

n. Paragraph 2-6-8, sub-paragraph 5, delete the word "handle" and substitute "handwheel".

Insert the following Caution paragraph between sub-paragraphs 5 and 6:

"CAUTION - Sealing steam should not be admitted to glands of a stationary turbine. Provision should be made for continuous turning of the turbine shaft at times seal steam must be admitted to glands. This may be done by one of the following methods:

- (A) Operation of turbine under control of governor valves.
- (B) Operation of turbine at slow speed under control of the trip throttle valve.
- (C) Hand rotation at a rate of 1/4 turn every 10-15 minutes. A jacking arrangement is provided for at the end of the generator rotor.

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Under most conditions requiring sealing of glands it should be possible to operate the turbine under control of the governor valves or trip throttle valve. If the turbine is operated under control of the throttle valve the speed should be checked any time there is a large change in steam pressure. In cases involving a wiped turbine generator bearing or loss of lube oil to a turbine generator set it may be desirable to secure gland seal steam, break condenser vacuum and windmill the propulsion turbine on the side of the casualty."

o. Paragraph 2-6-9, sub-paragraph 3, fourth line should read as follows:

"wrench (8, Fig. 2-10-19)".

p. Paragraph 2-6-10, eighth line should read as follows:

"ADJUSTMENT", Para. 2-4-9), the tripping speed must be obtained manually by depressing pin (117, Fig 2-10-9) and turning hand-wheel (114) which is on top of speed governor."

q. Paragraph 2-8-1, seventh paragraph should read as follows:

"Lubricate the turbine nozzle valve gear with high temperature grease (MIL-L-15719)."

Insert new paragraph as follows:

"Do not lubricate the valve stems."

r. Paragraph 2-8-3, after the Normal Clearance for Thrust Bearing Oil Guards add "on dia."

Change all clearances for the Shaft Packing Oil Guards, Steam Exhaust End to agree with clearance drawing Fig. 2-10-2.

s. Paragraph 2-8-6, paragraph 1, last sentence, change the word "exhaust" to "inlet".

t. Paragraph 2-8-19, correct all part numbers to agree with the referenced figure.

Sub-paragraph 3 change to read as follows:

"3. Slide the outboard emergency ring (355) endwise enough to install the clamp assembly (23, Fig. 2-10-19) and then finish sliding the emergency ring off the emergency governor body."

Sub-paragraph 6, page 2-51, after word "tool" insert "(22, Fig. 2-10-19)".

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u. Paragraph 2-8-20, paragraph 3, eleventh line, insert "(one turn)" between "in." and "before".

In Caution paragraph, second line, change the word "under" to "over".

v. Paragraph 2-8-21, sub-paragraph 3, change to read as follows:

"3. Remove the nuts (7), at the same time supporting the weight of the oil cylinder yoke assembly and cover."

Between sub-paragraphs 3 and 4, insert the following Caution paragraph:

"CAUTION - The joint between the oil cylinder (59) and cover (5) must not be allowed to open at any time the pilot valve and stem (41) is between them or the stem will be bent and unsatisfactory operation will result."

Sub-paragraph 4 should read as follows:

"4. Remove the oil cylinder yoke assembly and cover (5) from the valve body."

Sub-paragraph 18, change "valve (20)" to "(15)", "piston ring (14)" to "(16)", "orifice (19)" to "(13)" and "strainer (18)" to "(14)".

Between sub-paragraph 21 and III, insert Caution paragraph as follows:

"CAUTION - Use extreme care not to bend stem (41)."

w. Paragraph 2-8-22-1, paragraph a., add sentence as follows:

"Also disconnect valve stem steam seal and leak-off piping."

Paragraph "d" should read as follows:

"Chip out the spot welds, loosen nut (28) and remove key (25) on all the valves."

Change sub-paragraph letters "d" to "e", "e" to "f", "f" to "g", "g" to "h", "h" to "i" and "i" to "j".

Present sub-paragraph "f" - delete first sentence "Chip out the - -."

x. Paragraph 2-8-24, paragraph 4, change pins "(65 and 68)" to "pin (65)" in first line.

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 Ser 641-1404

Paragraph 5, insert "with studs (96)" between "which" and "secure" and "to studs (96)" and insert "to the oil cylinder". Delete "forks (76, 68)."

Paragraph 6, insert "with studs (97)" between "which" and "secure". Delete "to studs (97)" and insert "to the oil cylinder".

Paragraph 9, insert between paragraphs 6 and 7.

y. Paragraph 3-2-9, paragraph 3, change "Figs. 7-3-6.1" to Fig. 3-7-9.1" and delete "and 7-3-6.2".

Paragraph 4, change "Fig. 7-3-7.1" to "Fig. 3-7-8.1".

z. Paragraph 3-5-9, paragraph 2, last line, the reading of 0.009 is questioned as General Electric shows .006 in their book.

aa. Add new Paragraph 3-5-34 - Add information on use of tools and balance planes provided for infield balance of generator rotors.

bb. Chapter 4, Section 2 - Include pictures of the manual control rheostat, rectifier assembly voltage regulator, voltage adjusting rheostat, control switch and current transformer.

cc. Chapter 4, Section 5 - The maintenance and trouble shooting sections should be expanded to include data similar to that included in GRI-65753.

dd. Fig. 2-10-7 furnish enlarged view of relay and associated parts.

ee. Clear prints are required on all figures. Fig. 2-10-16, use correct drawing or delete from the book.

Robert A. Trout

Copy to:
 DeLaval Steam Turbine Co., Trenton (Mr. Jackson)
 Commercial Engineering Co., WASHDC (Mr. R. Fox)
 FPSO Byron, Georgia (Codes 240M and 622.3)

ROBERT A. TROUT
 By direction

660G 641B

Prepared by A. R. Bennett, Ext. 61659
 Typed by M. L. Jenkins, 9/12/60
 7130078-60

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DEPARTMENT OF THE NAVY
BUREAU OF SHIPS
WASHINGTON 25, D. C.

IN REPLY, REFER TO
CVA63/9510
NObs-67652
Ser 651B-32
9 January 1961

Bureau of Ships
Foster Wheeler Corporation, 666 Fifth Avenue, New York 19, New York
Bureau of Naval Material, Buffalo

Subject: Main boilers, Contract NObs-67652; Preliminary Technical
Manual, approval of

Re: (a) Foster Wheeler Corp ltr Ref 3-37-3894-3902 dtd 31 May 1960

1. This subject preliminary technical manual was forwarded by reference (a) for approval and assignment of a NAVSHIPS number. NAVSHIPS number 351-0652 is hereby assigned. The preliminary technical manual is approved subject to the following corrections.

- a. Delete "CVA-63" from cover and title page.
- b. Delete "U.S. Navy Contract NObs-67652" on the title page.
- c. Page 111 - Correct the spelling of "refractory".
- d. The "List of Drawings", "List of Materials" and "List of Spares and Tools" are excerpted from the approved manufacturer's drawings. It is recommended that the complete approved drawings be substituted in reduced size format.
- e. The "List of Combustion Control Drawings and Spares" should be deleted and placed in the Combustion Control Technical Manual.
- f. Page 1-13 under "General" in the 3rd paragraph, correct "Figs. 1-1-1 and 1-1-2" to read "Fig. 1-1 and 1-2".
- g. Page 1-17 under "Superheater" in the 2nd paragraph, correct the text to refer to the 268 superheater elements which are in turn welded to 134 bifurcated elements.
- h. Page 1-17, under "Superheater" in the 7th paragraph delete "provides" and substitute "provide".
- i. Page 1-21, Figure 1-3, it is recommended that the complete drawing be reproduced in lieu of the views shown.

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QVA63/9510
NCS-67652
Ser 651B-32

Page 2-3, under "Blowdown Valves", in the fifth paragraph, delete "72 steaming hours" and substitute "72 steaming hours".

Page 2-3, under "Feedwater" delete "Feedwater for these Bureau of Ships." and "To prevent possible Bureau of Ships." substitute "Feedwater quality and boiler water treatment shall meet the requirements in Bureau of Ships Manual Chapter 56."

Page 2-3, under "Combustion" in the seventh paragraph delete "When relighting the atomizers." and substitute "Whenever atomizers are extinguished, shut off the oil, open all air registers and purge the furnace."

a. Page 2-3, under "Water Level" after the first paragraph, add the following:

"Procedure in Case of High or Low Water"

"Except for momentary fluctuations during rapid maneuvering, whenever the water disappears from sight (either high or low):

- a. Secure oil supply to all burners
- b. Close feed-check valves
- c. Close boiler steam stop valves
- d. If there is any question as to whether the condition is high water or low water, blow through water gages to determine definitely whether gages are full or empty.
- e. In event of high water, blow the boiler down to the middle of the gage glass using the surface blow valve.
- f. Relight the burners and cut the boiler on the line again in the usual manner.
- g. In the event of low water, open safety valves cautiously by hand and relieve boiler pressure gradually.
- h. Close burner registers and diminish air supply to the boiler by stopping the blowers.

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CVA63/9510
NObs-67652
Ser 651B-32

i. In the event of low water, it is essential that no attempt be made to restore the normal water level by increasing the supply of feed-water, as this would result in sudden and too rapid cooling of overheated pressure parts."

n. Page 2-4 under "Combustion and Feedwater Control" last paragraph after NAVSHIPS add "351-0654". It is recommended that the text be reviewed and revised as necessary to account for NAVSHIPS 351-0654 wherever Combustion and Feedwater Control Systems Technical Manual is referenced.

o. Page 2-4, under "Tube Failure" delete "If a tube up the stack." and substitute:

"To prevent serious injury to personnel and to reduce to a minimum the extent of damage to the boiler whenever a large steam leak occurs, the following action shall be taken, as far as the particular circumstances permit:

- a. Shut off the supply of oil to the burners.
- b. If blowers are running, increase their speed, if necessary, to drive the escaping steam up the smoke stack and out of the machinery space.
- c. Close the boiler steam stops of the damaged boiler.
- d. Gradually open safety valves as soon as possible to relieve the pressure.
- e. Close the burner registers.
- f. Except in cases of tube failure due to low water, when consequent overheating is involved, continue the feed supply until fires are out, to prevent the heating surfaces becoming uncovered and overheated. Special care should be taken to maintain the water at the proper height in the other boiler if it is being steamed.
- g. After the pressure has been decreased and the fires are out, stop the blowers and close all possible sources of air flow into the furnace. Allow the furnace to cool slowly."

p. Page 2-4 under "Internal and External Inspection" delete "or steam".

REPRODUCED AT THE NATIONAL ARCHIVES

CV 63/9510
 NObs-67652
 Ser 651B-32

q. Page 2-5, Figure 2-1 - The title refers to "curves for various sprayer plates". However, only one sprayer plate is used. Correct as necessary.

r. Page 2-6 under "Filling Boiler" in the second paragraph reference is made to the "17 inch water gage glass". The installed gages have a 22-1/8 inch visibility. Correct as necessary.

s. Page 2-8, in the second paragraph delete "protection steam need not be used during normal light-off".

t. Page 2-8, Figure 2-3 it is recommended that the applicable drawings be obtained from the shipbuilder.

u. Page 2-9, under "Lighting-off Straight Mechanical, etc." Second sentence insert the word "to" between the words "not" and "be".

v. Page 2-9 under "Lighting-off Manual Return Flow, etc." Same comment as (u) applies.

w. Page 2-9, paragraph 2-2 "Lighting-off Manual Return Flow" Delete "(During Emergencies only)" and substitute "(when automatic controls not in use)".

x. Page 2-10 - "under Sootblowers" lines 6 and 7 delete all in parenthesis. "Under Oil Burners" (a) line 6 after "kerosene" insert "or diesel oil." (b) line 15 delete "page 31" and substitute "page 3-31." (c) The chronological sequence of events in this paragraph indicates blower being run to purge furnace with air registers closed. Recommend lines 9-13 "When all atomizer of all gases" be deleted and substitute the following: "When all atomizer valves are closed secure the oil lines and fuel pumps and reopen air registers. Run a blower long enough to insure that all oil on the furnace floor is consumed and that the furnace is cleared of all gases. After purging the furnace close air registers".

y. Page 2-11 delete steps 3 and 4 "When the boiler superheater air vents" and substitute;

"3. Boiler lay-up of the watersides can be accomplished by either of the following methods:

(a) Steam Blanket

(1) When boiler pressure drops below 150 psig, open the superheater protection steam valve allowing steam to enter the steam drum and superheater.

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NObs-67652
Ser 651B-32

(2) Keep all vents and drains closed, except for the superheater drains which should be opened to the high pressure drain system to prevent the accumulation of condensate in the superheater.

(3) If water level in the steam drum becomes too high due to condensing steam, reduce the water level by use of the surface blow or bottom blow system by draining the condensate to the bilge.

(b) Water Fill

(1) Make sure all vents and drains are closed.

(2) When boiler pressure drops to 15 psig, use the reserve feed and transfer pump to pump deaerated water from the DFT to the boiler back-fill connection via a hose connection in the reserve feed transfer piping.

(3) Continue filling water in the boiler until the water is no longer in sight in the steam drum level gage; then open the drum and superheater vents.

(4) When water issues forth from the vents, close them. Close the back fill valve and secure the pump.

(5) The boiler is now completely filled with water and should be kept pressurized from the D.F.T."

s. Page 2-11 delete paragraph 5 "Disposition" and paragraph 2-9 "Laying-up Steam Generator".

aa. Page 3-11 - Paragraph 36 delete "JAN R-717" and substitute "MIL-O-717".

bb. Page 3-22 under "Installation Procedure" Subparagraph (1) line 15 insert "Fig. 3-16".

cc. Page 3-23 at the end of the section on Handhole Plugs, add a series of sketches showing the minimum permissible header thickness at the handhole opening before the seat must be built up by welding. Separate sketches should show the dimensions for superheater, economizer and water-wall headers. Then insert the following:

REPRODUCED AT THE NATIONAL ARCHIVES

CV163/9510
N00s-67652
Ser 651B-32

"Minimum Header Thickness at Handhole Openings"

"The minimum allowed thickness should be measured radially as shown in Figure _____. If there is corrosion on the outside of the header, remove the corrosion and make the measurement from the clean bare metal."

"Whenever grinding is necessary to resurface handhole seats, only the minimum amount of grinding should be done to insure a satisfactory seat. In this way, seats may be resurfaced many times before reaching the minimum header thickness."

"Whenever the minimum thickness is reached, the seat should be rebuilt by welding to restore the original thickness. The seat should then be refaced in the usual manner."

dd. Page 3-26 in general note #1 insert the words "anchor bolt" before the word "material" and delete "class A" and the "A" of "MIL-N-15721A".

ee. Page 3-26 in general note #7 delete "general specifications for machinery, section 551-2 par. 551-2-h" and substitute "instructions in the Bureau of Ships Manual Chapter 51."

ff. Page 3-28 General Note #1 (same comments as for page 3-26 general note #1).

gg. Page 3-45 - Since all rotating soot blower elements are to sweep a complete 360° circle, Section I-3, "Adjusting Blowing Sweep" should be deleted. The remaining paragraphs should be renumbered accordingly.

hh. Page 3-59 under "Paragraph 7 Maintenance" delete second paragraph "the valves ... correctly" and substitute "The valves shall be tested in accordance with the provisions of Bureau of Ships Technical Manual Chapter 51."

ii. Page 3-73 Left hand side of page identify "MORAN" as Manning, Maxwell and Moore.

Case 7:08-cv-10228-JSG Document 59-27 Filed 12/16/10 Page 9 of 18

REPRODUCED AT THE NATIONAL ARCHIVES

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CVA63/9510
NObs-67652
Ser 651B-32

jj. Page 3-103 Boiler Air Preheaters Second paragraph line 2 delete "fig. 3-0 and 3-0" and substitute "fig. 3-63 and 3-64". Also paragraph 3 line 3 delete "1-27" and substitute "1-31".

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By direction

240M

Prepared by B. Slominski, A. St. George, Ext. 62473
Typed by E. Bartley, 1/5/61

DE1052 Class/SH7(2-2617-N)

6-15-66-1552
 RECEIVED
 JUN 15 1966
 JUN 17 1966
 BUFFALO PUMPS

From: Todd Shipyards Corp.
 (Seattle Division)
 By Gibbs & Cox, Inc.
 21 West Street,
 New York, N. Y. 10006

To: Supervisor of Shipbuilding, USN, New York
 Federal Office Building
 29th Street and 3rd Avenue
 Brooklyn, New York 11232

Subject: DE1052 - Distiller Feed Pump - Preliminary Equipment
 Manual.

References:

(a) Letter from Todd Shipyards Corp. (Gibbs & Cox, Inc.)
 DE1052 Class/SH7(2-2618-N) to Buffalo Pumps Inc. dated June 15, 1966. *FILE 574*

(b) Detail Specification for Building Ocean Escort
 DE1052 Class

Enclosure: Two copies of (A)

(A) Preliminary Equipment Manual for Distiller Feed Pump -
 Buffalo Pumps Inc.

1. In compliance with the requirement of the specifications it is requested that a NAVSHIP number be assigned to the equipment manual, Enclosure (A). By Reference (a) the Design Agent forwarded comments on the manual to the pump manufacturer.

2. Final approved manuals will be distributed in accordance with Paragraph 9020-5-C of Reference (b).

3. It is anticipated that the final manuals will be available for distribution approximately 60 days after final approval.

4. The Supervisor's response to the above is requested by July 8, 1966.

RH/jo
 cc: Buffalo Pumps
 Buffalo, N.Y.
 Todd, Seattle
 Todd, New York

TODD SHIPYARDS CORPORATION
 (SEATTLE DIVISION)
 BY GIBBS & COX, INC.
 W. C. BACHMAN

R. P. Fulton
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 By direction

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